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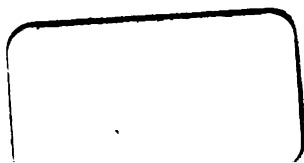
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THE
GEOGRAPHICAL SYSTEM
OF
HERODOTUS

EXAMINED AND EXPLAINED,

8128
BY A
COMPARISON WITH THOSE OF OTHER ANCIENT AUTHORS,
AND
WITH MODERN GEOGRAPHY.

IN THE COURSE OF THE WORK ARE INTRODUCED

DISSERTATIONS

ON THE ITINERARY STADE OF THE GREEKS, THE EXPEDITION OF DARIUS
HYSTASPES TO SCYTHIA, THE POSITION AND REMAINS OF ANCIENT
BABYLON, THE ALLUVIONS OF THE NILE, AND CANALS OF SUEZ;
THE OASIS AND TEMPLE OF JUPITER AMMON, THE ANCIENT
CIRCUMNAVIGATION OF AFRICA, AND OTHER SUBJECTS
OF HISTORY AND GEOGRAPHY.

THE WHOLE EXPLAINED BY ELEVEN MAPS ADAPTED TO THE DIFFERENT SUBJECTS; AND
ACCOMPANIED WITH A COMPLETE INDEX.

By JAMES RENNELL, Esq.

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THE
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SECTION XVI.

OF AFRICA AT LARGE, ACCORDING TO HERODOTUS.

Herodotus knew a greater extent of Space in AFRICA than in the other Continents; but only the North-east part of it, in detail—In doubt how to class Egypt—Had no idea that Africa extended so far to the West and South as it really does—Lower Egypt and the Promontory of Soloeis, taken by him for the Eastern and Western Extremities of Africa—Conjectures respecting this Promontory, which was the Limit of the ancient Navigations—Various Notices, shewing that the Ancients were not absolutely agreed respecting its position; but that the Soloeis of Herodotus was Cape Cantin—M. Bougainville mistaken in respect of it—Herodotus, as well as Ptolemy and the Arabian geographers, supposed the coast of Africa to trend to the South from this Cape—Our Author knew the general distribution of North Africa, as far as the Sahara and the River Niger—The Geography of Egypt already illustrated by M. D'Anville—Inhabitants of Africa divided by Herodotus into two races: the Libyans and Ethiopians—common Boundary of their Possessions—Cape Verd, the Arsinarium Promontory of Ptolemy, denominated from the Assanhagi, or Sanhagæ Tribe—The Abyssinians, the Macrobian Ethiopians of Herodotus—Ethiopia, with him, included all the remote part of Africa—

The Niger explored by the Nasamones, and taken by Herodotus, erroneously, for the remote part of the Nile; as having an easterly course—The Sources of the Nile placed in too remote a situation by Herodotus, and the Ancients in general—The most distant sources of this River still unknown—not in Abyssinia, but more to the south-west—Proofs adduced from Maillet, and from Bruce himself—Report of Ledyard—The Nile doubtless formed of two distinct Branches, the one from Abyssinia, the other from the South of Darfoor—Reports of Ptolemy, Edrisi, and Abulfeda—Error of the two latter, in deriving the Niger from the Nile—Extent of the African Continent, southward, according to the ideas of Herodotus, who knew that it was surrounded by the Ocean.

THE THIRD and LAST division of our subject is AFRICA, or LIBYA. Concerning this continent, it may be said, that our Author was aware that it contained a greater extent of space than either of the others; although his knowledge of it, in *detail*, was more confined. Here it may be remarked, that if his native city, Halicarnassus, be taken for a centre, it will be found, that a radius of 1000 British miles will circumscribe the whole extent of his geographical knowledge in detail. It may also be remarked, that the circle so described, passes through, or near to, the several points of Babylon, Syene, Carthage, Corsica, the upper part of the Danube, the forks of the Borysthenes, and the mouth of the Tanais. So that it included Greece, Italy, Thrace, Scythia, Colchis, Asia Minor, Assyria, Palestine, Egypt, Libya, and the country of the Garamantes. It will be found, almost invariably, that beyond this range our Author grows more and more obscure and uncertain, as we advance in any line of direction whatsoever:

or, if any thing, he grows more obscure on the European, than on the Asiatic, side. But of the absolute measure of extent known to him, by report, Africa contained a greater proportion than either of the other two continents : or it may possibly be, that the space known, in that mode, in Africa, may have equalled that known in Asia and Europe collectively.

These being the circumstances of the case, it will appear that the parts of Africa best known to our Author, were those along the middle and eastern basons of the Mediterranean sea ; including Egypt and Libya, with Fezzan, and other *Oases*, in the Libyan desert. Beyond these regions, his descriptions grow less circumstantial ; as is the case of those of the upper part of the course of the Nile ; the course of the Niger ; the country about mount Atlas ; and the position of the promontory of *Soloeis*. And finally, he carries us into the regions of darkness, of fable, and even of absurdity, in his descriptions of the Macrobian Ethiopians, and the people of Nigritia ; of the fountains of the Nile, and the operation of the sun on its waters, &c. In fact, the same *cause* that allotted a place in his history to the description of the *ants* that were said to dig up gold in India ; and to that of the mode of collecting cinnamon in Arabia ; namely, the difficulty of getting at the truth, gave occasion also to the description of the table of the sun in Ethiopia¹.

¹ For the description of the *ants*, see Thalia, 102. See also Arrian's description of India.

The mode of collecting cinnamon in Arabia, will be found in

Although the term LIBYA is occasionally used by Herodotus, as synonymous to AFRICA (and particularly in Melpom. 41, 42, and 45), yet it is almost exclusively applied to that part bordering on the Mediterranean sea, between the Greater Syrtis and Egypt; and in which, *Cyrenaica*, the first Grecian establishment on that continent, is included. So that Africa, and not Libya, is the term generally employed by Herodotus².

It has been said, in page 218, Vol. I. that some doubt arises whether Egypt, in the contemplation of Herodotus, was a part of *Africa*. For he seems either to have expressed different opinions in different places; or to have expressed himself ambiguously: or possibly we may not have comprehended him rightly.

In Euterpe, 17, he appears to say, that Egypt did not belong either to *Asia* or *Africa*, but was classed

the same book, c. 111; and is so very extraordinary, as to bear some resemblance to one of the adventures of *Sindbad*, in the Arabian Nights' Entertainment.

² The desert which separates Egypt from Fezzan, contains a wandering tribe, named *Lebeta*, or *Levata*. This desert is to be regarded as the *proper* desert of LIBYA: and it may be a question whether the tribe of Lebeta, although *now* found in the interior of the country, may not have originally inhabited the sea-coast; and that the Greeks denominated Africa from *them*. This was the part of Africa the nearest to Greece, and the first colonized by the Greeks: and it is a known fact, that the *Adyrmachidæ* and *Nasamones*, who, in the days of Herodotus, inhabited the *coasts*, were, at a succeeding period, found in the *inland* parts, about Ammon and Augêla. Mr. Park saw a wandering tribe named *Libey*; and whom, he compares, in respect to their habits and modes of life, to *gipsies*.

distinctly ; or, if we may so say, it was, in respect of geographical arrangement, *extra-continental* : in effect, he thought that “ the *land of Egypt* alone constituted the natural and proper limits, or boundary, of *Asia* and *Africa*.”

He says also, Eut. 15, that the Greeks considered the *Delta alone* as EGYPT : but in this point Herodotus differed from them, and we think with reason, because the ancient *Egyptians*, as he observes, must have *had a country, before* the present Delta was formed ; and probably descended from thence, to a lower situation, as it encroached on the sea, or rather as it became habitable.

He also informs us, that *Asia terminates at Egypt*, Melp. 39 ; and that *Libya begins* where Egypt ends, 41. And again, Euterpe, 65, Egypt is said to be *near to Africa*. *These* notices seem to be clearly in favour of that arrangement, which makes Egypt *distinct* from Africa or Libya.

But, on the other hand, what he says in Melp. 41 and 42, gives a very different idea. These are his words ; “ except in that *part* which is *contiguous* to Asia, the *whole* of Africa is surrounded by the sea : ” and he goes on to say, that it was *proved*, by the ships of Necho having sailed down the Red sea, (Arabian gulf) and round the continent, to the Mediterranean and Egypt. And besides this, he says in the foregoing chapter, after describing a narrow tract of 1000 stadia, which can only be intended for the Isthmus of Suez, “ *here* the country *expands*, and takes the name of Libya.” The reader will determine for himself ; but it appears, on the whole, as if

Herodotus had either no decided opinion of his own on the subject; or that, in one of the places, he has merely expressed the opinions of others, without explaining his own ³.

Although Herodotus knew that AFRICA was surrounded by the sea; and was likewise apprized of the length of time that had been employed in circumnavigating it, yet it appears that he did not suppose that it had so great an extent to the *south*, or that it projected so far to the *west*, beyond the columns of Hercules, as it really does. For he says, Melp. 42, that "Europe in LENGTH *much exceeds* the other two continents; but is *far inferior* in BREADTH." Thus, then, notwithstanding that he extended the dimensions of Europe to an unusual length, by including the *Issedones* in it ⁴, yet even that extent will not reach beyond the 20th degree of south latitude, in *Africa*.

The breadth of Africa he must have reckoned from *east to west*; and which is undoubtedly greater by far than the breadth of Europe: and had he confined Europe within its proper limits, the *breadth* of Africa was even greater than the *length* of Europe. But he appears to have thought that the greatest breadth of Africa was comprized between Lower Egypt and a Promontory of Mauretania, on the coast of the Atlantic, named SOLOÆIS. For Herodotus, in common with Eratosthenes, Strabo, and

³ Polybius (lib. iii. c. 4.) supposed that *Africa* was contained between the Pillars of Hercules and the Nile.

⁴ He supposed the *Issedones* to lie no farther to the east than the meridian of the river *Jaxartes*. See Vol. I. p. 174.

Ptolemy, amongst the ancients ; and with Abulfeda, amongst the moderns, supposed this continent to project much less to the west than it really does : and they appear, moreover, to have placed the western extremity of *Africa*, at no great distance to the south of the *straits of Gibraltar* ⁵. And this opinion was no doubt, formed long before the time of Herodotus.

Our Author seems to have known the *general* extent of Africa in *this* direction, as will be shewn in the sequel ; but as the investigation is so closely connected with the particular geography of the coast of the Mediterranean, we shall reserve it until that subject is discussed in a subsequent chapter : and, in the mean time, the reader may regard the opinion of Herodotus on this subject, as coinciding nearly with those of Eratosthenes and Strabo, and which differ, in no very great degree, from the actual geography. The *Pillars of Hercules*, the Promontory of *Soloeis*, mount *Atlas*, and the Atlantic ocean, were objects familiar, at least in thought, to our Author : and it appears from Scylax, who wrote before Herodotus, that the extent of the Mediterranean was well known to the Carthaginians, and no doubt to the Greeks also ; since Herodotus himself calls it, “ the sea frequented by the Greeks.”

As he places the western extremity of the Persian, or Erythræan sea (for he certainly knew not that

⁵ Ptolemy even describes the coast to trend to the *eastward* of south.

there was a Persian gulf⁶), too far to the west, in respect of the Mediterranean sea, he must, of course, have believed that the Red sea, or Arabian gulf, had a northerly and southerly, instead of a NW and SE direction; otherwise there would not have remained a sufficient space for Arabia: and this would necessarily have the effect of *flattening* the *eastern* side of Africa.

It will appear clearly, from circumstances, that he regarded the Promontory of Soloeis, as the western extremity of Africa: but this idea did not go either to Cape Blanco, or Cape Verde, because he was speaking of the *inhabited* tract near the Mediterranean, and not of the central parts of Africa: nor had he, of course, any such idea of the general outline of that continent, as to be able to ascertain which part of it projected farthest to the west⁷.

The position of the promontory of SOLOEIS, therefore, becomes of great importance towards the measure of regulating our ideas of the ancient system of African geography; and of adjusting the limits of ancient navigations, and ought, of course, to be fixed at the outset of the present inquiry, although it will lead to details that may appear tedious. M. D'Anville has not spoken clearly to this point, but it may

⁶ See Vol. I. pages 260 and 261 of this work.

⁷ It happens that there are two capes of the name of *Blanco*, on the western coast of Africa; one in Morocco, the other on the coast of the *Sahara*, nearest to Cape Verde. They are more than 900 miles asunder. It is the Cape Blanco of Morocco alone that has any reference to the Promontory of Soloeis.

be concluded that he took Cape CANTIN for SOLOEIS : in which opinion we shall be found to coincide. The modern opinions have been divided between that and Cape BOJADOR.

Herodotus, in Euterpe, 32, says, “ all that part of Libya towards the Northern sea (Mediterranean) from Egypt to the Promontory of SOLOEIS ^a, which *terminates* the 3d division of the earth, is *inhabited* by the different nations of the Libyans ; that district alone excepted, in possession of the Greeks and Phœnicians. The remoter parts of Libya, beyond the sea coast, and the people who inhabit its borders, are infested by various beasts of prey.—The country *yet more distant*, is a parched and *immeasurable desert*.” Here he clearly distinguishes three belts or regions, parallel to the Mediterranean, the northernmost of which, we must, of course, conceive to have been that which extended along the sea coast, and was bounded on the south by mount Atlas, and other ridges : the middle one, that called the country of Dates ; and the third, the great desert, or Sahara, itself ^b. In consequence, the northernmost, or that between mount Atlas and the Mediterranean, should contain the Promontory of SOLOEIS ; supposed in this passage, as well as in the one that describes the voyage of *Sataspes*, in Melpom. 43, to be the most western land of Africa : for, in the first

^a *Soloeis*, in Euterpe, 32 : *Syloes*, in Melp. 43. In Hanno's Periplus it is *Soloeis*. Pliny calls it *Solis*.

^b Abulfeda's division is differently arranged : he goes from *west to east*, but making also *three* divisions.

instance, it forms one extremity of the habitable tract, of which Egypt is the opposite extremity: and in the second, it was the point from whence the voyager *first began* to pursue a southerly course, in his way from the straits.

Much the same idea of the relative position of Soloeis, arises on a perusal of the journal of the voyage of Hanno; although this document does not afford a regular chain of distance, or any positive notices of position, till we arrive at *Cerné* (*Arguin*). It therefore becomes necessary to examine at large this part of the journal.

The substance of it is, “ that having founded the *first city, Thymiaterium*¹, at two days’ sail beyond the Columns (of Hercules), and proceeding *thence* towards the *west*, they came to *Soloeis*, a Promontory of Libya, thickly covered with trees², where they erected a temple to Neptune—and again proceeded half a day towards the *east*, to a lake near the sea, full of reeds; and where elephants and other wild animals were feeding³. ”

¹ The *Thamusida* of the *Antonine Itinerary*, p. 7, may be taken for this place, it being 126 MP. from *Tingi*, (Tangier) say 94 G. miles direct. Hence it falls near the river of *Mamora*. The distance *may* have been sailed in two days, on a *known* part of the coast; as this, no doubt, was.

² We have examined the views of land in the new Spanish Charts of Don Tofiño, 1788, but do not find that either of the Capes *Blanco*, *Cantin*, or *Bojador*, are woody. But this is nothing to the purpose; for Hanno, at that time probably, would have found the *Hebrides* of *Scotland* covered with wood.

³ That herds of elephants were in this quarter we learn from

“ That having passed the lake, two days’ sail, they founded other cities near the sea, *five* in number⁴, the third of which, in the order of their route, was *Acra*. Thence they came to the great river *Lixus*, which flows from Libya, (or rather from mountains situated amongst the *Ethiopians*,) and has on its banks, the *Lixitæ*, a shepherd tribe, with whom the Carthaginians continued some time on friendly terms: and who appear to have been old acquaintances. Beyond this tribe dwelt the inhospitable Ethiopians. Leaving their friends, after obtaining interpreters from them, they coasted a desert shore, *three* days, and arrived at the island of Cerné; doubtless Arguin. The first *two* days they sailed *southerly*; the third, *easterly*.” See the Map of the Voyage of Hanno, sect. XXVI.

It is certain that this chain of distance, from its being broken and imperfect, proves nothing, when taken *altogether*; but the parts of it, taken *separately*, and with a reference to other notices, prove, or at least induce a belief of, a great deal. The distance from the strait of Gibraltar to Cerné, may be about 1230 G. miles along the coast; amounting to about 35 days’ sailing, according to the rate arising on that part of Hanno’s route between Cerné and the river Gambia: that is, 34 to

Pliny, (lib. v. c. 1.) who says, that they were very troublesome at the river *Sala* (*Salee*).

Sala appears to have been a place of note anciently, as well as at present. It is the *Salaconia* of the Itinerary.

⁴ *Caricon-ticos*, *Gytte*, *Acra*, *Melitta*, and *Arambys*.

35 miles per day, for 14 days : and which accords generally with the rate of sailing of ancient ships, deduced from a great number of examples⁵. Only $6\frac{1}{2}$ days, however, are *specified* : but it plainly appears, that one space is implied between Thymiatærium and Soloeis ; and another, in which the five cities were founded, between the latter and the *southernmost* river of Lixus : and these cities cannot be supposed to have been *very near* to each other. In course, a great many days' sail are omitted, though evidently implied.

It may be remarked, that the position of the coast is such as not to admit of a ship's sailing *eastward* for half a day, after passing Cape Bojador : but such a position of the coast is really found between Cape de Geer and Santa Cruz, round the southern termination of mount Atlas : and therefore, following, in our idea, the obvious meaning of the journal, one can only take for the Soloeis of Hanno, some one part of the coast between Cape Blanco and Santa Cruz ; that is, between the parallels of $30^{\circ}\frac{1}{2}$ and

⁵ It is known that a constant current runs to the southward along this coast ; at least within the limits of the settled northerly wind. This, of course, must have lessened the number of days' sail, and explains the cause of the error, in the calculation made by Hanno, where he supposes Cerné to be no farther to the *south* of the strait than Carthage was to the *east* of it. It also furnishes a strong presumptive proof in favour of the veracity of the journalist.

The ancient rate of sailing will be given in the sequel : at the same time we shall apprise the reader that the result is about 35 G. miles, or about 40 British.

$32^{\circ}\frac{1}{2}$: and conclude, of course, that the *five* cities beyond it were situated along the coast of the province of Sus⁶, and in the bay southward of Cape Nun: but certainly *short* of Cape Bojador.

Scylax of Caryandra says, that the distance is 12 days' sail from the straits to Cerné: that is, two to the Promontory of *Hermæus*, three thence to Soloeis; and seven more to Cerné. This requires a rate of 104 miles per day: and is nearer to *that*, which might be expected from a modern ship, than an ancient one. But his Periplus within the straits, gives a rate which is generally not very different from that of other ships of those days; or about 36 G. miles⁷. It must be allowed that the many examples adduced, ought to have more weight, than those alone, between Carthage and Cerné, even if the *general* rate of Scylax did *not accord* with the rest. Besides, the Periplus of Hanno above quoted, furnishes the strongest presumptive proof that the rate of Scylax did not ex-

⁶ The southern province of the kingdom of Morocco.

⁷ For instance, he says it is $75\frac{1}{4}$ days' sailing from Canopus to the Columns, tracing the sinuosities of the coast; we conclude, according to the usual mode of coasting. This gives a rate of 32 G. miles per day, and Hanno's rate between Cerné and the Gambia is 35, on 14 days' sailing. At the same time it must not be omitted, that Scylax says, that the voyage between Carthage and the Columns may be performed in seven days and nights, with a favourable wind. This requires a rate of 107 for each day and night, and is not very different from the 12 between the Columns and Cerné. But the same authority allows generally 36 only, within the straits, in a variety of instances. How are these accounts to be reconciled?

ceed, but rather fell short, of that *Periplus*. For, this latter places *Thymiaterium* at two days' sail from the straits; and *Scylax* allows the same distance between the straits, and the *Hermæum* Promontory, which place he describes to be short of *Thymiaterium*; consequently, by his account, this place must be *more* than two days' sail from the straits. He then reckons three more days to the Promontory of *Soloeis*; which distance, according to the same proportion, can only reach to Cape Blanco; but nevertheless, considering the vague nature of his description, Cape Cantin may have been intended. As to the remainder of his chain of distance, it is not worth regarding; as he reckons only seven days between *Soloeis* and *Arguin*.

Pliny says, (lib. v. c. 1.) that the river *Lixus*, (that is, the northernmost of the two, of that name, and the *Lucos* of the present time; a position well known;) is 57 MP^s. from *Tingi*, (or *Tangier*;) and *Rutubis* 313 MP. farther: and he adds, that *still farther on*, is the Promontory of *Solis*. The 313 will reach to *Saffy*; allowance being made either for the inflexions of the land route, or those of a coasting voyage. Hence *Saffy* may be taken for *Rutubis*, or rather *Rusibis Portus*, as we find it in *Ptolemy*, who places it within 10 minutes of the true latitude of *Saffy*. The Promontory of *Solis*

* In two numbers, 25, and 32. The *Itinerary* has 54 MP. between *Tingi* and *Lix*, which differs little from Pliny, and is justified by the distance of the *Lucos* R. from *Tangier*.

Pliny says that another authority gave 112, which must be a mistake.

then, is by Pliny's account, to be looked for *beyond* Rusibis, or Saffy; although it is not said *how far*: but Pliny could not at any rate have had Cape Bojador, which is about 6 degrees to the south of Saffy, in contemplation. And as Ptolemy has a promontory named *Solis Mons*, at about 70 miles to the southward of Rusibis, we may suspect that it was intended for the same place as the Solis of Pliny; and possibly too, for the Soloeis of Herodotus, of Hanno, and of Scylax, though somewhat misplaced. Nor could Ptolemy have had Bojador in contemplation, because his Solis Mons is placed four parts in five nearer to Atlas Minor, than to Atlas Major; or in other words, to Cape Cantin, than to Cape Bojador.

If we may regard the Solis Mons of Ptolemy, as the Promontory of Soloeis itself, this may be reckoned a *positive* notice respecting its situation; and indeed, the only one that occurs; although the presumptive evidence of Hanno and Scylax is very strong. But there is some difficulty in supposing that the promontory intended by the above writers, formed any part of the *comparatively* straight coast, which is found between the Capes of Cantin and Geer, when the characteristic distinction of Soloeis seems to have been *prominency*, beyond the line of the coast to the northward of it.

There are few parts of Ptolemy's geography, in which the latitudes agree so well with the modern observations, as in the part between the Strait of Gibraltar and C. Bojador. In effect, there is a remarkable coincidence in many points, as will ap-

pear by the subjoined table^o; so that this part of the coast must have been much frequented; but, it

^o Comparison of certain parallels, in Ptolemy, with the modern observations, and charts.

Ptolemy, Africa Tab. 1.		Modern Observations.	
Strait of Hercules . . .	36 0	C. Spartel . . .	35 48
Sala River . . .	34 10	Salee R.	34 2
Macanitæ . . .	33 30	Mazagon	33 20
Atlas Minor . . .	33 10	{ C. Blanco	33 20
Rusibisis Ptus . . .	32 30	{ C. Cantin	32 33
Diur R.*	31 40	Saffy (Bay)	32 20
Solis Mons . . .	31 20	Mogadore	31 25
Hercules Prom. . .	30 0	Tafelane Point . . .	31 0
Tamusiga	30 0	C de Geer	30 38
Usadium	29 15	Tamara	30 29
		Agulon	29 10
Una R.	28 30	C. Nun	28 40
Atlas Major . . .	26 25	R. Nun	28 26
Subas R.	25 0	C. Bojador	26 20
Gannaria extrema .	20 20	Ouro R.	23 34
		C. Blanco	20 47
		Arguin	20 26
Bagazi	18 50	St. John's R. Mirie	
Daradus R. . . .	15 0	Point	19 13
Arsinarium Prom. .	12 0	Senegal R. mouth .	15 52
Stachir R. . . .	11 0	C. Verde	14 48
		Gambia R. mouth .	13 30

* We cannot help regarding the *Pæa* Island of Ptolemy in lat. 32°, as being intended for *Madeira*. The latitude differs but little, but it is certainly too near to the coast of *Africa*, by many degrees of longitude. But as the *Fortunate Islands* were known to Ptolemy (his *Erythia*, in 20°, must have been intended for one of them, probably *Fortaventura*), what island so far to the north as 32°, could have been meant, but *Madeira*? This conjecture, in our idea, is rendered more probable by the description which Diodorus (lib. v. c. 2.) gives, of a large island, fertile, well wooded and watered, and situated at many days' sail to the west

is very remarkable, that, although the parallels are so generally exact, the bearing is out full four points of the compass ; it being nearly S b. E, in Ptolemy, when it is in reality about SW b. S¹. And hence it may be collected, that, when the latitudes could not be applied to the correction of the bearings, the ancients formed very erroneous calculations of them². But this does not, in the present case, destroy the harmony of the positions, in respect of each other, so far, as to prevent them from being recognised, by means of the general resemblance of the figure of the coast, combined with the parallels.

But to the south of *Atlas Major* (Bojador) the latitudes are not only in general wrong, but the figure of the coast loses all resemblance to the truth, until we come to Cape Verde : for even Cape Blanco (of the Sahara), which is the most prominent part of the coast, recedes, in the descriptions of Ptolemy, *within* a direct line drawn from Cape Bojador to Cape Verde. This latter is also about $2\frac{3}{4}$ degrees too far south ; the mouth of the Gambia $2\frac{1}{2}$ degrees ; and that of Senegal nearly a whole degree.

By a reference to the comparative table of latitudes (in the note) and to the geography of Ptolemy,

of the coast of Africa. It was said to be discovered by certain Phœnicians, who were blown by a storm into the Atlantic, as they were coasting Africa.

¹ Between C. Spartel and Bojador, the diff. lat. is 568, and the departure 410 ; whence the bearing is about S 36° W : Ptolemy has S 10° E : whence the error is about 46°.

² Thus, the *eastern* shore of the Mediterranean lies nearly NE and SE, in Ptolemy ; instead of about N b. E, as it ought to be.

it will appear, that *Atlas Minor*, the most prominent feature of the coast, in that geography, answers the nearest to Cape Blanco (of Morocco); which cape, together with that of St. Vincent, forms what may be called the mouth of the *funnel*, that conducts the stream of current from the Atlantic into the Mediterranean. But it also appears, that Ptolemy confounded Cape Cantin with Cape Blanco; and that *one* cape serves for *both* in his geography, although they are more than 20 leagues asunder. This is proved by the *suite* of positions from C. Blanco, northward, and C. Cantin, southward; for immediately to the N. of Atlas Minor, is *Macanita*, which is succeeded by *Sala*; as in our geography, *Mazagon* and *Salée* lie to the N. of Cape Blanco. Again, to the south of Atlas Minor, is found, in Ptolemy, the port of *Rusibis* and the river of *Diur*, answering in like manner with *Saffy* and *Mogador*.

The promontory of *Hercules* agrees pointedly to Cape de *Geer*, which is the proper termination of the ridge of *Mount Atlas*, on the coast. Ptolemy took Cape Bojador (his *Atlas Major*) for it: so that it happens that neither of the promontories denominated by him from the supposed commencement and termination of the ridge of Mount Atlas are, in fact, connected with it; which no doubt proceeded partly from his ignorance of the inland country; partly from its being described merely from hearsay. They were, however, the most prominent points of the coast; whilst the name of *Solis* is by him applied to a much less prominent part.

From a review of the argument, then, it appears,

that the *Soloeis* of Hanno, and of Scylax ; and the *Solis* of Pliny and of Ptolemy ; must have been situated between the Capes *Blanco* and *Geer*, on the coast of Morocco ; in which quarter also, the *Soloeis* of Herodotus, as being a part of the *inhabited* tract, must of necessity be situated.

From an expression (in Hanno) it might be concluded that *Cantin* was the *Soloeis* intended. It is said, that from *Thymiaterium* “ they proceeded to the *west* to *Soloeis* :” and *Cantin* is the point from whence the direction of the coast changes from westward to southward, in a greater degree than any where else, within the space in question. The *Soloeis* of Scylax may be either *C. Blanco*, or *C. Cantin* ; but more probably the latter.

The *Solis Mons* and *promontory* of Ptolemy and Pliny, are more to the south ; or between *Cantin* and *Geer* : but as there is no remarkable promineny of the coast between *Cantin* and *Geer*, the latter of which is the *Hercules promontory* of Ptolemy, it is difficult to assign the place of *Solis*. Ptolemy places it to the south of the river *Diur*, which we take for that of *Mogador* ; and to the north of *Mysocorras*, taken for *Meci*. Consequently, as the point of *Tafelane* lies between, *this* should be the *Solis promontory* of Ptolemy. That of Pliny may be supposed to be nearer to *Saffy* ; and hence it would appear, that different navigators, or geographers, called different capes by the name of *Soloeis* or *Solis* ; which is by no means extraordinary, as instances of a like kind have happened in

modern times ; and we even find two rivers of the name of *Lixus* on this coast.

Our idea of Soloeis ought, no doubt, to be regulated by the early authorities, such as that of Hanno, and of the Carthaginians in general ; which was probably the idea followed by Herodotus : and he expressly intends by it, as we have seen, the western extremity of the *inhabited* tract of Africa, along the Mediterranean sea, in one instance ; and in another, a promontory which formed the chief obstacle to navigators, in clearing the western lands of Africa, in their progress southward. It has also appeared, that the ancients in general agree in placing it within the space between C. Blanco and C. de Geer : and moreover, that they supposed the coast to trend to the south, from about the position of Soloeis. So that, on the whole, we must conclude *that* to be the promontory intended, from whence the coast turns sensibly to the southward, after projecting westward, from the neighbourhood of the strait of Gibraltar. For the circumstance that seems to have marked it, was, the difficulty of doubling it from the northward, with the prevalent winds of that region ; which are *westerly* ; and which difficulty was greatly increased by an indraught of current towards the mouth of the strait. This indraught is clearly proved by the journals of ships, which describe a motion of the sea in every direction from SE to NE, as they advance from a station in the Atlantic, opposite to Cape St. Vincent, towards another station opposite to Cape Blanco.

When Cape Cantin, or Soloeis, was once doubled, the wind, which before might have been adverse, would serve tolerably well, until they arrived within the limits of the NE trade wind (or rather of the *northerly* wind, said to be the prevalent one, near the shore), which would doubtless happen, before the coast again trended much to the westward; although the group of Canary islands is known to disturb the regularity of the trade wind occasionally. And as Cape Bojador itself lies in about twenty-six degrees of latitude, we cannot conceive any difficulty in doubling *it* from the northward, on the score of the winds, provided that ships sail at a proper distance to clear the shallow water, and *rippling* of the current, said to disturb the water beyond it³. In a word, it may be conceived, that only the Capes *Can-*

³ It is certain, that in the history of the early part of the Portuguese discoveries, there is much stress laid on the difficulty of doubling Cape *Bojador*; which was said to be so named, from its great projection, westward, from the line of the coast. However, it is very difficult to conceive how, within the tract of the northerly winds, a ship should find any difficulty in making her way to the south; as the current also sets that way. It is equally astonishing how the Portuguese, the best mariners at that day, should have found a difficulty in accomplishing a task that was performed by the ancient navigators.

It is indeed given out, that the strong current round C. Bojador occasions a frightful *rippling*, and a breaking of the sea, on the sands that extend to six leagues off: and that even the Portuguese mariners were terrified: and that it was the *ne plus ultra* of the Spanish navigation till A.D. 1492; when it was found, that by keeping at a proper distance from the shore, the passage might be effected. (Astley's Coll. Vol. i. p. 11; who refers to *Barros*, dec. i. b. i. c. 2; and to *De Sousa*, lib. i. c. 1.)

tin and *Bojador* can have any claim to a preference in this matter; and *that*, from their *prominency* beyond the line of the coast; and for which quality the Promontory of Soloeis seems to have been distinguished. In point of relative situation, Bojador, from what has appeared, is absolutely out of the question: and it must then be concluded, that *Cantin* was the promontory intended by Herodotus, and the Greeks in general; whilst Pliny and Ptolemy placed it more to the south, perhaps from misapprehension: but as to Bojador, no one of them seems to have looked so far to the south.

M. Bougainville's Soloeis is, however, Cape Bojador; and he places all the five cities, of which *Acra* is the third in order, from Soloeis, between Bojador and the river Ouro, taken by him for the *greater* Lixus. But, independently of other circumstances, one finds in M. Delisle's Map of Africa, a town named *Arca*, together with several others, between Mount Atlas and Bojador; and even if *this* be not the *Acra* of Hanno, it is a more likely situation for towns, on that Continent, than the *desert* coast, on the south of Bojador. But in fact M. Bougainville allows, out of all proportion, too great a rate for the sailing of Hanno's fleet; for when we find 300 miles allowed for the two first days between the straits and Thymiaterium, as he does, one need not be surprised at his transporting that commander to Benin, whilst others cannot suppose him to have gone much, if at all, beyond Sierra Leona; that is, only $\frac{2}{3}$ of the distance to Benin⁴.

⁴ See Mem. Acad. Inscript. Vol. xxvi.

The *greater* Lixus it may be difficult to place : though the river St. Cyprian answers to the distance of three days' sail short of Arguin (or Cerné), on the proportional rate between the *latter* and the river Gambia. But the description does not seem to accord, either with that, or the Ouro : for neither of them appears to be a *great* river, or to have any *length* of course ; and the Lixus was said to possess *both* of those qualities. However, if we may judge by what passes elsewhere, great changes may have happened in respect of the course of the Lixus : for the principal stream of the *Oxus* (*Jihon*) which once flowed into the SE part of the Caspian, flows no longer in its former channel. And this has probably arisen partly from sand blown into, and arrested by the surface of the river, when *low* ; partly from its own depositions, when *swoln*. In like manner, the Lixus may have now ceased to flow into the sea, " from the Libyan mountains ;" and may form an inland lake : nor should we be surprised if the *Wad-Drah* (or river *Drah*) should have been the Lixus. That river is now lost in the sands of the Desert, according to Abulfeda ⁵.

We have been unavoidably led into this long disquisition, for which we crave the reader's indulgence.

Thus, then, our Author evidently supposed the western side of Africa to trend to the south, from about the parallel of 33° ; but what his ideas of the form or extent of the Continent may have been, we have no means of knowing. It may, however, be

⁵ Tab. III. Africa ; article *Darah*.

collected, generally, from his vague comparison of the proportional extent of *Africa* to *Europe*, that he supposed the former to extend very far to the south of the equator ; but the consideration of this part of the subject must be deferred, until we come to the inquiry concerning Herodotus's idea of the position of the sources of the Nile.

It appears from the various notices scattered about, in different parts of his history ⁶, that Herodotus had heard a great deal concerning the interior parts of Africa, most of which was probably collected during his residence in Egypt. It has already been shewn, page 9, sup. that he distributes the great body of Libya (but in which Egypt is not included), into three regions ; the interior or southernmost of which "is a parched and immeasurable desert." Euterpe, 32. This desert is again mentioned, in Melp. 181, and is said to " extend from the Egyptian Thebes to the columns of Hercules ' ;" and, in 185, it is said to be " a vast and horrid space, without water, wood, or beasts ; and totally destitute of moisture." All these descriptions clearly refer to the great African desert, or SAHARA, whose character he seems to have understood distinctly ; but it will also appear, in the sequel, that he had heard of the great *inland* ⁸ river of Tombuctoo and Kasseena (in effect, the *Niger* of

⁶ Melp. 181, 185, and 191 ; and Euterpe, 31.

⁷ " The Africans (says he) who inhabit the sea coast, are *nomades* : the more inland parts, beyond these, abound with wild beasts ; and remoter still, is *one vast desert*, from the Egyptian Thebes to the columns of Hercules."

⁸ Used in contradistinction to those which reach the sea.

the Romans), which flowed *beyond* the borders of this desert.

His descriptions of the several tracts of inland country, are oftentimes so brief, that *whole regions* are disposed of in a single line. But he enters particularly into the description of the provinces, along the coast of the Mediterranean, from *Egypt* to the neighbourhood of *Carthage*; and is yet more minute, the nearer he is to the seat of his inquiries, *EGYPT*; concerning which country, and its immediate dependencies, he is well known to have entered into very minute and interesting details; not excepting also its geography. But this is a part of Herodotus which has been so well illustrated, and even rendered familiar by the writings of several eminent persons, that it would be unnecessary, if not presumptuous, in us, to undertake the subject. We mean only to say a word concerning its ancient architecture, with a view to prove that both it, and the mythology of Egypt, were extended far into the Libyan desert: and to make some observations on the ancient and present state of the alluvions of the Nile, from whence much may be learnt respecting those of other rivers.

The ancient geography of *Egypt*, in particular, has been so well illustrated by M. D'Anville, that it would be idle in us to attempt a new system of it, unless a fresh stock of materials had been previously collected. It is however true, that certain parts of it require correction; particularly the Isthmus of Suez, the head of the Delta, and certain other parts. And these corrections we are enabled to effect, by

means of observations published since the time of that great geographer.

It may be proper, however, to remark, in this place, that in the report of Herodotus, respecting the *extent* of Egypt, he has made use of a *stade* which is totally different from *that* which he uses, when he refers to *Greece*, or to *Persia*. This appears in a remarkable instance, where he assigns an equal number of stades, within 15, to the space between *Athens* and *Pisa*, as between *Heliopolis* and the *sea coast* of Egypt; although the former be about 105, the latter 86 G. miles only; the one giving a proportion of 755, the other of 1012, to a degree. So that he appears to have used stades of different scales, without a consciousness of it. (See pages 21 and 25 of Vol. I.)

A like proportion appears, in his calculation of the length of Upper Egypt, and the breadth of the Delta: but he gives different dimensions of the Delta in different places; and in all, a greater number of stades than are allowed by others⁹. In the *comparative* extent of *Upper* and *Lower* Egypt, he is pretty exact, although the scale be faulty. In the discussion of the stade, in page 25, Vol. I. we have supposed that his error arose from a faulty evaluation of the *schæne*, an Egyptian measure: and this seems conclusive from the reports of Eratosthenes and Strabo, respecting the distance between Syené and Alexandria. For these, the reader is referred to p. 31, Vol. I.

⁹ Respecting the Delta and its alluvions, we shall speak in a future Section.

Concerning the course of the Nile, above Egypt, we shall speak hereafter.

Herodotus divides the inhabitants of Africa, generally, into two races; (with the exception of strangers, who were the PHŒNICIANS and GREEKS.) "The natives," says he, Melp. 197, "are the AFRICANS and ETHIOPIANS; one of which possesses the *northern*, the other the *southern*, part of Africa." By these nations are evidently intended the MOORS and the NEGROES; which two classes are as distinct at the present day, as in ancient times; and apparently have not *greatly* varied their ancient limits; although the Negroes may, in many instances, have received new masters from amongst the Moors.

The common boundary of the Africans and the Ethiopians, in ancient times, may be placed at the southern border of the Great Desert. Hanno found the Ethiopians in possession of the western coast, about the parallel of 19° : and Pliny, lib. v. 31, places them at five journies beyond Cerné, which agrees nearly with the report of Hanno. At present, the Negroes are not found higher up than the Senegal river, or about 17° ; and that only in the inland parts. It appears that the Senhagi tribe, who are not Negroes, possessed the coast about Cape Verde, in the time of Ptolemy ¹.

¹ Cape Verde is the *Arsinarium* promontory of Ptolemy. We learn, that when the Portuguese first explored the western coast of Africa, between Morocco and Guinea, in 1446, the tribes or nations of the *Assanhaji* and *Jalofs*, were separated by the river of *Sanhaga* (Senegal); the former being to the *north*, the

The Nasamonian explorers, mentioned by Herodotus,² when they approached the great *inland* river of Africa, or that of Tombuctoo and Kasseena (the *Niger*), found a different race of men, from what they had before seen; and who spoke a different language. They indeed called them a *dwarfish*³ people, and of a *black* colour: the latter particular seems decisive of their being Negroes; as they must have been much blacker than the people of the coast of the Mediterranean to have warranted the

other to the *south* of it*. The Assanhaji are the Zenhaga of our maps; and the Sanhagæ of Edrisi and Abulfeda: a nation which, in the times they describe, appear to have occupied the tract between Morocco and the Senegal river, and between the shores of the ocean and Agadez inclusive. The early voyagers speak of the *Sarra* of the *Assanhagi*; meaning the Sahara, or Great Desert; Abulfeda also mentions them as the governing people in Audagost (Agadez): and as possessing the southern part of Morocco. They are, therefore, properly the people of the Great Desert and its environs. Doubtless the Portuguese named the river now corrupted into Senegal, from them, as Ptolemy did the Promontory Arsinarium (Cape Verde), whence we may infer that they *then* possessed both sides of the Senegal river, called by Ptolemy, *Daradus*.

At present the Sanhaga tribe are placed, by geographers, at no great distance from the coast of the ocean, between the rivers of Nun and Senegal; and the Jalofs between this latter and the river Gambia: both of them in the position in which the early discoverers found them.

² Euterpe, 32. Of these more will be said presently.

³ Sataspes also reported that he saw a *dwarfish* people on the coast of Africa, far to the south. Melpom. 43.

* (Astley's Collection, Vol. i. p. 13, 14.)

distinction⁴. They must also have been humane, in that they do not appear to have ill-treated the strangers, who came amongst them, in an odd, if not in a suspicious manner: and this *trait* of character belongs to the Negroes in their natural and unmixed state. They may, indeed, not unaptly be styled the HINDOOS of AFRICA.

Again, Ethiopia approached to the boundary of Upper Egypt, in the eastern part of Africa, in the idea of Herodotus⁵: and this may, perhaps, be styled Ethiopia *proper*; answering to Nubia and Abyssinia. "Ethiopia," says he⁶, "which is the extremity of the habitable world, is contiguous to Arabia, on the SW. It produces gold, in great quantities; elephants, with their prodigious teeth; trees and shrubs of every kind, as well as ebony: its inhabitants are also remarkable for their size⁷, their beauty, and their length of life." Thalia, 114⁸.

The *Macrobian* Ethiopians appear as if meant by our Author for a different people from those bordering on Upper Egypt; for, in Thalia, 17, they

⁴ Herodotus says of the Ethiopians of Africa, Polym. 70, that they "have their hair more crisp and curling than any other men."

⁵ Thalia, 97, and Euterpe, 29.

⁶ Thalia, 114.

⁷ This is poetically expressed by Thomson,

———— The floods

In which the *full-formed* maids of Afric lave

Their jetty limbs; ————— Summer, v. 811.

⁸ Herodotus remarks, that "whatever may be the cause, the Africans are *more exempt from disease* than any other men." Melp. 187.

are said "to inhabit that part of Libya which lies towards the Southern ocean (Indian sea)." But as the people of *Elephanta* understood their language; and as the description of them in Thalia, 97, agrees with that of the Ethiopians *above* Egypt (in 114); we conclude the Macrobian to be the *Abyssinians* (whose dominion might even extend south-eastward to the ocean); and that the Ethiopians which were conquered by Cambyzes in his march towards the Macrobian, and who also served in the war of Greece, under Xerxes, Thalia, 97 and 17, were the *Nubians*, situated between Upper Egypt and Abyssinia⁹.

It is certain, however, that Herodotus (like the rest of the ancients) gives a wide range to Ethiopia; since he designs by it, the whole southern part of Africa; extensive, as from his own descriptions, he must have conceived it to be. For, it was with him "the extremity of the habitable world;" and included all those countries, which, for want of the means of discrimination, he was compelled to comprize in one mass; as *we* may do, by the remote inland parts of *North America*, or *New Holland*.

The exaggerated length of course of the Nile, strengthened his error respecting the extent of

⁹ Mr. Bruce (we know not what authority he had for the supposition) is of opinion, that the *Gongas* and *Gubas* are the Macrobian. Vol. iii. p. 259. These people inhabit two small provinces or districts of Abyssinia. But from the context of the history, the Macrobian must be regarded as a considerable nation; since their monarch sent a message of defiance to Cambyzes.

Ethiopia *proper* ; although the remote sources of this famous river were regarded as unknown to *strangers* then, as they truly appear to be at the present day. Speaking of the sources of the Borysthenes, Melp. 53, Herodotus says,—“ the sources of *this* river, like those of the *Nile*, are to me unknown, as, I believe, they are to every other Greek.” But it was, nevertheless, supposed by Herodotus, “ that the course of the Nile, without reckoning that part of it which flows through Egypt, was known to the extent of four months’ journey, partly by land, partly by water :” that is, to the country of the *Automoli*¹, which was so far distant, that the city of Meroe lay *midway* between *it* and Upper Egypt.—“ It is certain (says he) that the Nile rises in the *west*, but beyond the *above point* all is uncertainty ; this part of the country being, from

¹ The Egyptian garrisons stationed in *Upper Egypt*, against the *Ethiopians*, having been kept without relief three years, with one consent revolted to the enemy, and received from their new masters a district for their maintenance ; situated, as we might have supposed, in a very remote part from Egypt. They are said to have had a sensible effect in civilizing the *Ethiopians*. Eut. 30. These were named *Automoli* ; meaning *Deserters*.

Being at first pursued by *Psammeticus*, who adjured them not to desert their country and their wives and children, they are said to have signified, in an indecent way, that wherever they went, they should doubtless obtain both wives and children. During the late distressing mutiny, and revolt of a part of the fleet, it is said that *a like answer* was made by some of the mutineers, though not accompanied by the act of indecency, recorded by Herodotus. It is worthy of remark, that Bruce mentions certain people who had revolted, or deserted, in modern times, and formed a community in Abyssinia.

excessive heat, a rude and uncultivated desert." Euterpe, 29, 30, and 31.

Herodotus then proceeds to state the adventures of certain *Nasamones* (before alluded to) who came from the neighbourhood of Cyrene, and made an expedition into the *interior* part of Africa, with a view to extend their discoveries beyond all preceding adventurers; and who may therefore with propriety be styled the AFRICAN ASSOCIATION of that day. The distance to which they penetrated is not told; but it was, apparently, *very far*; "first proceeding through the region which was inhabited, they next came to that which was infested by wild beasts; leaving which, they directed their course *westward, through the Desert*," and were finally taken prisoners, by *black men of a diminutive stature*, and carried to a city "washed by a *great river*, which flowed from *west to east*, and abounded in *crocodiles*!" Euterpe, 32.

He adds, Euterpe, 33, "that according to the opinions of Etearchus, sovereign of the state of Ammon (from whom this relation came), the river in question was the *Nile*." This, continues Herodotus, "probability confirms—the Nile certainly rises in *Libya*, which it divides: and if it be allowable to draw such a conclusion, it takes a similar course with the *Ister*."

² In the description of the Indus, Herodotus calls it the *second* river that produced *crocodiles*, meaning the *Nile* as the first. But here we have a *third*: and *Hanno*, who doubtless preceded him, mentions the *Senegal* river (though not *by name*), which makes, of course, the *fourth*.

It may, however, with great probability, be supposed, that the river seen by the Nasamones, was that which, according to the present state of our geography, is known to pass by Tombuctoo, and thence eastward, through the centre of Africa (in effect, the river commonly known by the name of NIGER); but which we cannot agree with Herodotus, in supposing to be the upper part of the Nile, from the following circumstances :

First, the great difference of level that must necessarily exist, between the Niger and the Nile, admitting that the former reached the country of Abyssinia. For, by that time, it would have run at least 2300 G. miles, in a direct line ; and near 2000, after it had *descended* to the *level* of the Sahara, or Great Desert. And the Nile, at the point where the White River (which alone can be taken for the Niger, if such a confluence can be supposed) falls in, has more than 1000 such miles to run, before it reaches the sea ; and has, moreover, two or more cataracts to descend, in its way. Besides, Abyssinia is positively a *very elevated tract*. Mr. Bruce, Vol. iii. p. 642, inferred from his barometer, that the level of the source of the Nile, in Gojam, was more than *two* miles above the level of the sea : and this is repeated in pages 652 and 712 ; where he says “ fully ” two miles.

Again, in page 719, he says, that the *flat* country of Sennar is *more than a mile* lower than the high country of Abyssinia.

The second circumstance is, that the Niger, throughout the tract of *Nigritia*, in common with

all the rivers of that region, swells with the periodical rains, and is at its *highest pitch*, when the Nile is under the like circumstances in Egypt³. Now, considering how long a time it would require for the waters of Nigritia to reach Egypt, the effect ought surely to be, that instead of what happens, at present, the Nile ought to be kept up to nearly its highest point, *a very long time* after the Niger.

It should also be remarked, that the reports of the Arabian geographers state, that the western streams, which they suppose to communicate with the Nile, *are derivations from*, instead of *adjuncts to*, that river⁴.

To us, it appears more probable that the remote sources of the Nile are rather to the *south* than the *west*; or nearer to the meridian of Abyssinia (though by no means *within* that country); in which position Ptolemy, Edrisi, and Abulfeda place them; though greatly *too far* distant to the southward: for Ptolemy places them in $12\frac{1}{2}^{\circ}$ south latitude, Edrisi, in 16° : and Abulfeda appears to follow Ptolemy⁵. If the four months' journey allowed by

³ This is a circumstance mentioned both by Mr. Park, and by Major Houghton, late in the service of the African Association. It was also known to Pliny; who says, "that the *Niger* swells at the same season with the Nile, and that its products are the same." (Lib. v. c. 8.)

⁴ Such were the opinions of Edrisi, and—Abulfeda, of which more presently.

⁵ If it be supposed, as it ought, that Ptolemy placed the remote head of the Nile according to *certain data*, and that he erred only in the adjustment of his scale of distance, and in the bearing, his error may, in a great measure, be corrected, by com-

Herodotus, be reckoned at no more than 10 G. miles per day, on a straight line, and this distance, equal to 1200 miles⁶, be laid off in the direction of the general course of the Nile; it will reach to the parallel of three or four degrees north, which yet leaves a vast extent of course for a river of no greater bulk than the Nile; for this river, great as it is represented, yet when compared with some of the capital rivers of Asia, sinks very much in the estimation of its grandeur and bulk⁷. Ptolemy, a

paring his position of the *Coloe* lake (the *Tzana* and *Dambea* of others, and the head of the Abyssinian branch), with the modern accounts. We find this lake in Ptolemy, too far to the south by 12 degrees; that is, at the equator, instead of 12° N, as in Bruce's Map. If we apply this difference as a corrective to the position of Ptolemy's SW source, it should be placed about half a degree to the south of the equator. This is, indeed, a coarse way of making the correction, but it has appeared that the statement of Herodotus carries the remote *known* part of the Nile to about three or four degrees north latitude, whilst the source was yet more remote; and, probably, in his idea, near to the equator.

It may however be proper to remark, that Ptolemy was not aware, that the eastern Nile performed the early part of its course in a curvilinear direction, *southward*, for the space of more than four degrees, before it finally turned to the *north* (for he allowed those deep indentings between *Syene* and *Meroe*); and as he evidently supposed this part of its course to point to the north; it must be supposed, that had he known the contrary, he would have placed the lake, and eastern source of the Nile, in 4° north, instead of placing them at the equator.

⁶ If these four months' were taken on the footing of the three months' journey from *Sardis* to *Susa*, they would produce about 1250 G. miles, although these appear to be no more than the marches of an army.

⁷ Let the reader compare the descriptions of the Nile, in most

native of Africa, and a resident at Alexandria ; who had probably the best opportunities of knowing the general state of the geography of that continent ; and who, moreover, wrote posterior to the inquiries made by the Romans concerning it ⁸, had no idea that the sources of the Nile were in the *west*. Not that he was ignorant of the *western* rivers of Africa, as well the inland ones, as those which communicate with the Atlantic ; yet none of these waters are described to communicate with the Nile, in his geography. And when there is found, on a comparison of that part of his geography of Africa, between the Red sea and the greater Syrtis, a great deal of resemblance to the modern maps ; we must surely regard him as a person not ill informed : not to mention the general truth of his delineation of the courses of the Senegal and Gambia rivers, which he conducts into the Atlantic, on different sides of Cape Verde ; whilst the Niger, which, in his geography, answers to the Joliba, or river of Tombuctoo, is described to terminate as it begins, in an inland lake ⁹.

It has appeared, that Herodotus expresses, in the strongest terms, his belief that the Nile rises in the

of the books of travels ; and more particularly in the intercepted French Correspondence ; with that of the Ganges, in the Memoir of the Map of Hindoostan.

⁸ Both Augustus and Nero had sent persons to explore the sources, or to inquire concerning them. Plin. vi. 29.

⁹ The reader is referred to the Proceedings of the African Association ; and to the Appendix to the Travels of Mr. Park, for an account of the Niger.

west ; but, like all other geographers who do not put their materials to the test, by a geometrical construction, he (if he does not, in effect, contradict himself, yet) renders his own account improbable, by his reasonings, and by his different statements. For, he supposes in one place, Euterpe, 31, 32, 33, that the Nile rises in the *west* ; and that beyond the greater Syrtis and the country of the Nasamones ; whilst in other places he pointedly derives it from the *south*. For example, he says that the upper part of its course, situated at four months' journey (equal to 1200 G. miles) from Egypt, is occupied by a nation who extend to the *southern ocean* : for the *Macrobian* Ethiopians who are here meant, can be no other than those amongst whom the *Automoli* settled : Euterpe, 30, 31 ; and who must be the *Abyssinians* of modern times ; since *Meroe* lay midway between them and *Upper Egypt*. Euterpe, 29, 30.

Again, he gives another proof of his belief that the Nile came from a place far to the south ; for, in Euterpe, 24, 25, he thought its waters were absorbed by the presence of the sun, when in the *south*. It matters not how absurd the argument that is meant to be supported may be : it is the sentiment manifested in the course of it that is to the present purpose.

Perhaps the difficulty may be solved, by supposing that Herodotus first conceived a just idea of the course of the Nile, on being told that it came from the *south* ; but that afterwards he blended with it, the story of the *Nasamones*, and the *western* river,

without weighing the circumstances properly. Had he not declared, Melpom. 50, that the Nile had *no* adjunct streams, we might have supposed that he meant to describe two distinct branches; referring them respectively to the river seen by the Nasamones, and to that of the Ethiopians in the *south*¹. Or he might have heard of the *White* River, and have taken that for the continuation of the one seen by the Nasamones.

As to the place of the remote sources of the Nile, it seems to have been destined to remain long a secret. That it has remained unknown so long, is probably occasioned by its being situated within the deep recesses of a tract (either *desert* or *mountainous*, or *both*) which no *strangers* have had occasion to visit; nor ever will, until it may become *their special business* so to do. Whenssoever the traversing of this tract shall turn to as much advantage as the crossing of *other* deserts or mountains, then will the true source of the Nile be found, and not before. For it may be conceived, that it is situated in a country that lies far out of the track of any caravan that visits the marts frequented by Europeans.

That source in Abyssinia, called by Mr. Bruce, and by some others before him, the head of the Nile,

¹ *Juba* led *Pliny* into a mistake, that the *Nile* sprang from the *west*, and even from *Mauretania*; and that it lost itself *under ground*, and afterwards rose up again. (Lib. v. c. 9.) By this mode of reasoning, any river that is lost in the sand may undergo a *transmigration*, and appear again in the *shape* of another river, two or three thousand miles distant!

appears to be, in reality, nothing more than the *eastern* and *least remote*; as well as the *least* in point of bulk; of the two principal branches of the Nile which unite below Sennar². Concerning this fact, we shall adduce some evidence, which although presumptive only, cannot be disproved by any positive evidence; since no such exists: and it is no inconsiderable point in it, that Mr. Bruce himself, although undesignedly, has furnished a principal part. We begin with M. Maillet.

This gentleman collected his information from travellers; and there is no reason to suspect a design to mislead, having no *system* to support. Nor does he pretend to have any correct ideas respecting the geography of the upper part of the Nile, but relates merely what he had heard, without comparing the evidence. Nay, he even supposed the Nile to rise in Abyssinia; for by the lake *Gambea*, he doubtless intended *Dambea*, the *Txana* of Bruce and others; but then he appears to confound it with the lake of the western branch. The chief point in his description is, that at two or three journies below Sennar (it should rather be seven or eight) the Nile, or Abyssinian branch, receives a great river, named

² The reader will not suppose that we entertain a shadow of doubt respecting the fact of Mr. Bruce's having visited the eastern sources of the Nile. We only mean to deny that these are the proper heads of the Nile; because it may be believed, that there are other sources more remote. His *opinions* only, not his *facts*, are controverted. But the question respecting the place of the source of the Nile, rests precisely as it did before Mr. Bruce wrote.

Bahr Abiad, (or the White river,) which he says is *at least as considerable as the Nile*. He says, moreover, that it runs nearly parallel to the Nile, at the distance of 12, 15, and 20 journies from it. He does not, however, pretend to fix the source of the White river: he only remarks, that it is easy to perceive that "the source of the Nile is not *unique* ; and that its origin is not beyond the equator." (Desc. Egypt, pages 40 and 41.)

Mr. Bruce's words are the following. "The river *Abiad*, which is *larger* than the *Nile*, joins it here, &c.—Still the Nile preserves the name of the *Blue* river³—The *Abiad* is a deep river: it runs dead, and with little inclination, and *preserves its stream always undiminished*, because rising in *latitudes* where there are *continual rains*, it therefore suffers not the decrease the Nile does, by the six months' dry weather;" (vol. iv. 516.) Thus Mr. Bruce goes beyond M. Maillet, by allowing the White river to be of *greater bulk* than the Nile: but what is more, he admits that it always continues in the same state; whilst the Nile suffers a diminution half the year. He says, moreover, that its bed has little descent, whence it may be concluded that it runs through its own alluvions in that part; which particular im-

³ The *White* river is so named from the muddy colour of its waters, whilst the *Abyssinian* branch is named the *Blue* river; probably from its comparative clearness. Some have supposed that the word *Neel* or *Nile* is meant to express the *blue* colour of its waters, but it rather appears to be an appellative; there being at least three large rivers in Africa of this name; as the Nile of Egypt, of the Negroes, and of Makadsh.

plies a considerable length of course. But Mr. Bruce accounts for its bulk, and equal state, from the *continual rains* that fall in the countries contiguous to *its* source; which is saying, in other words, that it springs from a different region from that which gives rise to the Abyssinian branch; whence, by his account, the source of the *White* river should be very remote from that of the *Blue* river in Abyssinia. But what says his map? There the limits of the *periodical* rainy seasons lie between 16 degrees of latitude; and those of the *perpetual* rains between 4 degrees, on each side of the equator. There also the source of the White river is placed in 8° north, and that of the Blue river in 11° only, with a difference of meridians of no more than $2\frac{1}{4}^{\circ}$: and one of the springs of the latter is even near the 8th degree. Do *these differences* then constitute *different regions*? We may add, that the White river is drawn on his map much *smaller* than the eastern branch; which differs, as we have seen, totally from the description⁴.

The fact we should conceive clearly to be, that the White river has a much more distant source than the other. Some light is thrown on this particular, by Maillet's saying that the White river runs nearly *parallel* to, and at the distance of, 12, 15, and 20 journies from the Nile, which can only be true of two rivers that spring at a great distance from each

⁴ It is certain that Ludolphus describes a river by the name of *Maleg* or *Meleg*, which has a course perfectly similar to the *White* river of Bruce. But M. D'Anville regards it as one of the branches of the *Abyssinian* river.

other. We are of opinion, therefore, that Mr. Bruce, who saw the White river, has admitted its superior bulk, and state of fulness, at all seasons, properties which the other branch does not possess : (as to its being in the same state all the year, that we cannot suppose of any tropical river;) and hence, as he appears not to have made out his system of a constant rainy season, to supply the river in question, the reader will probably be inclined with us, to suppose that a stream, at all times confessedly larger than another, has, in all probability, a more remote source.

We come next to Mr. Ledyard. This observant traveller furnishes notices, which induce a strong belief that the remote source of the Nile is situated very far to the south-west of Abyssinia.

During Mr. Ledyard's residence at Cairo, in 1788, he repeatedly visited the market-place, where the slaves from the interior part of Africa were exposed to sale⁵. He saw a considerable body of them, which came from *Darfoor* (as he writes it), a country, says he, well known on account of the *slave trade*, as well as that in *gum* and *elephants' teeth*; and, it appears (page 54,) that there is a caravan, specifically from Darfoor; that is, distinct from the Sennar caravan. By his manner of speaking, these people were, in appearance *uncouth*, even amongst *Africans*: but he adds, that "they appeared a harmless wild people." He represents Darfoor as a very distant country, even in respect of Sennar; for

⁵ African Association, chap. ii. page 50, *et seq.*

he says, that the slaves came from the interior parts of Africa. And he was told by one of them, that he came from the west of Sennar 55 days' journey, or four or five hundred miles : and a Negro chief, *implied* to be of the party, said that "*the Nile had its source in his country.*" Mr. Ledyard's description of these people is particular. They had the *true Guinea face* ; and their curly hair was *plaited in tassels*, and *plaistered with clay and paint*.

Although we cannot fix the precise position of the great body of this country, yet we are in some degree enabled to approximate it, by means of some notices in Mr. Bruce's map ; and which will turn out equally in favour of our argument.

Mr. Bruce places *Kordofan*, a frontier province of *Dar-Four*, said to be conquered by the king of Sennar, to the west of, and adjacent to, the country of Sennar, whose capital lies in $13\frac{1}{2}$ degrees north latitude. Hence it must be supposed that the country of Darfoor extends from thence to the westward : and as Mr. Browne⁶ has obligingly informed the Author that the capital of Darfoor, visited by him, lies about the parallel of 15° , it may be concluded that the country itself extends some degrees in every direction around it ; and consequently to the south, amongst the rest.

Other notices respecting the direction of the caravan routes to Darfoor and Soudan, occur in the map of Mr. Bruce's travels ; and which assist in giving some idea of the position of Darfoor. He states, that the caravan from Darfoor to Mecca, passes the

⁶ The reader is referred to the Travels of Mr. Browne, for further information respecting *Darfoor*, or *Darfur*.

Nile at Dongola, (in lat. $19\frac{1}{2}^{\circ}$) and thence to a port on the Red sea, where it crosses to Judda. This route appears to be a branch of the one from Soudan⁷ to Cairo, described also on the same Map; by which we must conclude, that it is the track of the caravan of Darfoor, spoken of by Ledyard. This track passes in a NNE direction from the parallel of 15° , and about the meridian of Seewah, and falls into the road from Sennar to Cairo, at a point short of the Greater Oasis, or *El Wah*.

From these notices collectively, it may be inferred that the country of Darfoor lies between the meridians of Cairo and Seewah generally; but its extent southward we can have no idea of: nor is it a clear point, that the Negro chief seen by Ledyard, was of Darfoor, although the slave was. Mr. Browne says that Darfoor is *not* a country of rivers, so that the *White* river must pass to the south of it, of course, and may be supposed to spring from the great chain of mountains; the continuation of those which, according to Mr. Bruce, separate the heads of the northern and southern waters, in the parallel of 8° north, in *Abyssinia*; and which extend westward to *Manding*.

Combining the distance reported by M. Maillet, between the eastern and western branches; that is, 20 journies; with the above reported distance, of four or five hundred miles from Sennar; the remote

⁷ The Moors and Arabs call NIGRITIA by the general name of SOUDAN. Abulfeda includes all the known part of Africa, south of the Great Desert and Egypt, in *Belad Soudan*, or the country of Soudan. With him, Soudan is the southern quarter of the globe.

source of the Nile should be looked for, very far to the SW of the latter place : but it is evident, that nothing critical can be determined in the present state of our knowledge, save that the distant source of this celebrated river is certainly not in Abyssinia, but in some country to the westward of it. To us it appears probable, that it may be as far to the south as the parallel of 6° ; which is nearly that assigned it by M. D'Anville ; but less remote than Herodotus, Ptolemy, or the Arabian geographers, supposed.

Since then it appears that the Nile is formed of *two distinct* branches, or heads, of which, the White river is by far the most *remote*, as well as the *largest stream* ; the Abyssinian branch, or *Blue* river, cannot be the *true* head of the Nile, according either to reason, or to common acceptance ; as by the *head*, or *source* of a river, nothing else can be understood but the most distant spring, where there is a palpable difference in the length of the branches. A river may have many branches, and each of those will have its proper head : but the river itself, which is formed of those collective waters, must necessarily have for *its* head, that spring which is the most distant of all. The *Kennet* and *Lea*, for instance, are branches of the Thames ; but the heads of those streams, near Marlborough and Dunstable, are neither of them the head of the *Thames*. Where the branches are nearly of equal length, it may bear a dispute *which* of them forms the proper head of the river ; but this appears to be out of all question here ; as PTOLEMY, EDRISI, and ABULFEDA, will be

found to agree with the authorities we have adduced, in the main point of placing the head of the Nile, in a remote parallel, southward, and very far to the SW of Abyssinia; although the three first have doubtless exaggerated, very greatly, the quantity of the distance.

PTOLEMY, who perhaps knew more than any other person amongst either the ancients, or the moderns, (of those whose reports have reached us ⁸.) knew the eastern, or Abyssinian branch, which he describes to flow from the lake *Coloe*, (answering to the *Tzana* of Bruce) under the name of *Astapus*; as well as the *Tacazze* of Bruce (the lesser of the two eastern heads,) by the name of *Astaboras*⁹. But at the same time he describes a more western branch, as the continuation of the great river of Egypt. So that the best informed of the ancient geographers, on this point, will be found to agree with the mo-

⁸ The interior of Africa was so little known in the times of Eratosthenes and Strabo, that their authority concerning the sources of the Nile is of little value. They both appear to describe the Abyssinian branches as the only heads of the Nile known to them; and to which they give the same names as Ptolemy does; *Astapus*, and *Astaboras*.

According to M. Gosselin's projection of their geographical systems, they placed the head of the Nile in about 8° north, which is not very different from M. D'Anville's position of the eastern source.

⁹ Mr. Bruce (Vol. iii. 648.) appears to say, that *Atbara* is a modern name of the *Tacazze*, or ancient *Astaboras*. Can *Astapus* be a corruption of *Azerak*, or *Azrak*?

The *Coloe* of Ptolemy seems intended for the *Galla* of D'Anville and Bruce. *Galla* is the southern division of Abyssinia.

dern Oriental geographers, and with the reports of modern travellers : although it appears that none of them had any knowledge concerning the precise situation of the fountain itself ; having taken it from the general information of others. Now, to quote the sentiments of M. D'Anville, " in a case where we are all ignorant, we ought not to reject entirely the reports of Ptolemy, and the Oriental geographers, until we can obtain some knowledge of the subject ourselves."

Since the copies of EDRISI and ABULFEDA are not common, we shall extract from them their ideas on the present subject.

EDRISI, who is the first of the two authors, in point of chronology, speaks of *two* rivers of the name of NILE ; that of EGYPT, which flows to the NE : and that of the NEGROES, or of NIGRITIA, which flows from *east to west* : and both of these he derives from the same fountains. (See page 15, *et seq.*)

" These two parts of the Nile (says he) spring from the mountains of the *moon*, which are situated 16° *beyond* the *equator*. From these mountains, the Nile issues in 10 streams, five of which flow together into one great lake, and the remainder into another such lake. From each of these lakes flow three rivers, the whole of which by their conflux, form a very large lake, near which is the city of *Tumi*, which is populous.—The lake is situated under the equator.—A mountain shuts up the greater part of the north side of this lake, and separates the courses of the two rivers that flow from it, the Nile

of the *Negroes* passing by it to the NW, and thence westward, through the territories of the *Nigritæ*, the greater part of which lie adjacent to it: and the *Nile* (of *Egypt*) passing on the east side of the mountain, flows to the *northward*, watering in its course, the countries of *Nubia* and *Egypt*."

He remarks also, that the distance between the two smaller lakes is six journies; (say 114 G. miles;) and between the sources of the Nile, and the lake under the equator, 10 journies, or about three degrees of latitude, only; which, if true, contradicts the former statement, but may yet be the most probable of the two accounts.

ABULFEDA says, from Ibn Sina (*Prolegomena*, article *rivers*) that "it springs from those deserts which extend southward beyond the equator; wherefore it is difficult for us to investigate its sources; of which, as of the whole river, we are indebted to the *Greeks* for all our knowledge. They relate that Ptolemy informs them, that they flow from the mountains *Al Komri*¹, in *ten* distinct streams, each of which is distant from the other, the space of a *degree*: so that the most western being in lon. 48°, and the second in 49°, the eastern one of all must be in 57°, (rather 58°). That these ten streams run into two lakes; five into each. (He then refers back to his descriptions of these lakes, where he has placed them both in lat. 7° south: and the most westerly of the two in 50° lon.) The

¹ Meaning the *mountains of the moon*.

longitude of the eastern lake is 57° . From each of these lakes spring four rivers, or eight in all : *two of which are lost in other rivers*, but the other six run northward, and form a *round* lake at the equator, which lake is named KAWAR, and has also been mentioned above ¹. Its longitude is $53\frac{1}{2}^{\circ}$, and it lies under the equator, (*though other people speak differently.*) The Nile emerging from this lake, and being named the NILE of EGYPT from its running through that country, waters the countries of Nigritæ in the following order : first it visits *Zagawan* ²; then *Nubia*, and its capital *Donkala*,

¹ There is a considerable variation between the statement *here*, and in the place alluded to. For not only the lake is there called *Cura* ; (as it is also called in tab. xxvii.) but there is also described the efflux of a third river from it, namely, that called the *Nile of Makadsh* *, and which is said to run out from the east side, as the *Nile of Ganah* on the west, and that of *Egypt* on the north. However, it is *Ibn Said* who speaks here, but it is *Ibn Sina* who furnished *Abulfeda* with the above description of the course of the Nile. *The Nile of Makadsh* is said, tab. xxvii. to swell at the same period with the *Egyptian Nile* ; and that it flows into the sea of *India*. In effect, all the great rivers of Africa swell at the same season, because their sources are all in the same climate.

² It is called *Zagawan*, in *Abulfeda*, tab. xxvii. *Soudan*, and described to occupy a position correspondent to the NE part of *Nubia*.

Our Author also says, that " the *Nile*, that great and celebrated river, is unequalled by any other in nature." That it has the longest course of any river in the world, its waters the

* The *Machidas* of the Maps. It is also named the river of *Zebee*.

situated in lat. 15° N. lon. 52° E."—He adds, that after many flexures, it descends to *Aswan*, (*Syene*) and thence passes on to *Misraim* (or Cairo), &c.

It may be perceived that neither of these authors had any positive information concerning it, and that Abulfeda, in particular, follows Ptolemy, in a great measure. It ought to be of some weight, that the opinion of Ptolemy, considered generally, should have stood so long uncontroverted.

It also appears that Edrisi places the source in 16° south, whilst Abulfeda only marks the parallel of the two first lakes, which he places in 7° . Both, however, agree in placing the third, or greater lake, at the equator: but there can be little doubt but that both are in an error, as well as Ptolemy, in respect of the parallel; though it would be losing time to enlarge upon it.

Both of them also, in effect, allow the Nile of the Negroes (Niger) to be derived from the same source as the Nile of Egypt: but Edrisi's statement is the most positive of the two. And again, Abulfeda quotes Ibn Said³, who says that *Ganah*, situated in the heart of Africa, is on the bank of a river of the

most pure, that stones do not become *green* in it, as in other rivers, and that its increase is occasioned by the rain that falls in the countries near its sources. But he is mistaken in saying that its waters *increase*, as the days *shorten*; since the contrary is a well-known fact. Accuracy is not the praise of Oriental writers.

³ Abulfeda, Tab. xxvii. *Soudan*.

name of *Nile*, which springs from the same place as the Nile of Egypt. He indeed calls it the *twin brother* of the Nile; though if Edrisi was right, it would be rather the *offspring*, or a derivative from it. The same Ibn Said again speaks of the Nile⁴, at *Tocrur* in the country of the Negroes; but as Tocrur is situated on a continuation of the river of Tombuctoo, the Niger must be the river meant; that is, the Nile of the *Negroes*, and not that of *Egypt*. And as he also says that the Nile of *Ganah* (still meaning the Niger) fell into the ocean, in lat. 14°; by which it is evident that he took the Senegal river for it, his authority goes for nothing; since the late discoveries of Mr. Park prove that the river of Tombuctoo, (intended by the Niger) runs from *west* to *east*, agreeing with Herodotus. As the authorities both for this fact, and for the continuation of this river, to the country of *Wangara*, are already before the public; being detailed in the Proceedings of the African Association (1798), and in the Appendix to the Travels of Mr. Park, it will be needless to repeat them here.

Edrisi's account also, for the above reasons, goes for nothing, when he describes the derivation from the Egyptian Nile, at the lake *Kawar*, to run to the west, through the greatest part of the territories of the *Nigritæ*. It is, however, very possible that a stream from the *neighbourhood* of the lake Kawar (although not from the lake itself), and perhaps, separated from it only by a ridge of mountains, may

⁴ Abulfeda, Tab. xxvii. *Soudan*.

flow to the west ; and that it may join the river of Tombuctoo, by the medium of a lake ; possibly that of *Kauga* : (See Proceedings African Assoc. 1798, p. 146, and App. to Park's Travels, p. lxxix. ;) but neither does the great midland river of Africa run to the west ; nor does it communicate with the Atlantic.

It is worth remarking, that Ptolemy describes a river springing from the SE, about the parallel of 10° N, amongst the *Nubi*, and flowing to the NW, into the river *Gir* ; apparently meant for the river of Bornou. This may be the river meant by Edrisi⁵.

We shall conclude this part of our subject by remarking, that neither Edrisi nor Abulfeda take any notice of the *eastern* head of the Nile, which rises in Abyssinia. This would have been entirely in favour of that system, which places the principal source of the Nile there, had not both of these authors known, and treated of, the country of Abyssinia, in their respective works. At the same time, it may be observed, that the line of course of the great Abyssinian branch, and the position of the lake *Tsana*, in respect of it, are so totally different from the descriptions of the head of the Nile, by Ptolemy, Edrisi, and Abulfeda, that, in our idea, it is scarcely possible to confound them together.

Since Herodotus believed that the sources of the

⁵ It is certain that Abulfeda remarks (*Prolegomena*, lake *Cura*) that although Ibn Said and Edrisi have wrote that the Nile of *Ganah* issues from the lake Cura (or Kavar), yet that Ptolemy denies that any other river but the *Egyptian* Nile issues from that lake : and that the Nile of Ganah (*i. e.* the Niger) flows from some other source.

Nile were much more remote than four months' journey from Upper Egypt; whether to the south, or south-westward; this bespeaks a belief of the extension of the continent of Africa, to the neighbourhood of, if not *to*, the equator itself. And as it may naturally be supposed that he does not limit the Continent absolutely to the place of the source, a farther extension must be reckoned on; and we may assume that Herodotus believed that Africa extended beyond the equator, southward. But even this extent does not come up to the idea which naturally arises, on the comparison made by him of the lengths of the different Continents of *Europe* and *Africa*: for the expression is, "Europe, in length, *much exceeds* the other two, but is of *far inferior* breadth:" Melp. 42: which may be understood to mean, that the *length* of *Africa* and *Asia* bear at least some degree of proportion to that of *Europe*. The relative proportion certainly cannot be fixed, but it may be understood, as on other occasions, generally; as for instance, $\frac{1}{4}$ or $\frac{1}{5}$ would be thought a considerable proportion of excess.

The length of Europe, under its accustomed boundaries, Cape St. Vincent and the river Tanais, would reach a few degrees only, to the south of the equator; from the northern point of Africa near Carthage: but Herodotus, as we have seen, assumed a different limit for Europe, and included the *Issedones* in it; whence, the length of Europe, according to his system, would have reached from Carthage, to about the 20th degree of south latitude, in Africa. If therefore $\frac{3}{4}$ or $\frac{2}{3}$ of this extent, be assumed as a

proportion, *Africa* will be extended to five or eight degrees south of the equator. Nor could a person, who believed that the circumnavigation of it employed more than two years, well suppose a less extent.

It appears on the whole, as if the knowledge of Herodotus, respecting the detail of the interior parts of Africa, extended only to the upper part of the course of the Nile, southward; and on the SW, to the Niger. And although he knew the fact, simply, that Africa was surrounded by the ocean, yet he seems to have known no particulars relating to the coasts, beyond the places to which the Carthaginians traded, on the west side; perhaps to the neighbourhood of Sierra Leona: nor on the east, beyond the Macrobian Ethiopians, who appear to have extended to the ocean, beyond the outlet of the Arabian gulf. So that it seems as if the extent of the geographical knowledge in *detail*, possessed by Herodotus, corresponded pretty nearly with that of Ptolemy: bating the western rivers that fall into the Atlantic, and the coasts of Mozambique and Sofala: although they respectively formed very different conclusions, concerning the termination of the Continent, southward.

(2)



SECTION XVII.

CONCERNING THE ISTHMUS OF SUEZ, AND THE ANCIENT CANALS THAT UNITED THE TWO SEAS.

The ancients mistaken in the breadth of the Isthmus of Suez, which they reckoned much too wide—Source of the error—Opinions of the ancient geographers severally—The moderns generally in the same error—The question determined by the difference of latitude—Construction of the geography of the Isthmus, and of the positions on which the lines of the canals depend—Arrangement of Pelusium, Heroopolis, and the head of the Arabian gulf, in respect of the Egyptian Babylon—Conjecture respecting the site of Heroopolis, or Heroum—Salhia the Sile of the Antonine Itinerary—Mount Casius—Pelusiatic branch of the Nile, no longer exists, than as a periodical stream; and in a different line of course—Bubastis, at the head of the canal of Necho, placed—General idea of the courses of the ancient canals across the Isthmus—All drawn from the Nile, and not from the Mediterranean Sea—History of the different canals, according to Herodotus, Strabo, Diodorus, and Pliny—Doubts respecting the person who first completed the communication—Herodotus to be credited, when he reports that Necho began, and Darius completed it—Ptolemy Philadelphus probably renewed, and improved it—Investigation of the particular line of the first canal, from the Pelusiatic branch, to the Red Sea—Considerable traces remaining—The canal of Trajan, and of the Caliphs, no more than a branch added to the former one—Causes of the retreat of the Sea, from the head of the Arabian Gulf—Rise of the tide in it—Idea

that the Red Sea was higher than the Mediterranean, perhaps founded—Descent of the different canals compared—Complete failure of the project of uniting, permanently, the two Seas—The floods of the Nile favourable to it—Reported dimensions of the canals of Necho, Darius, and Ptolemy.

THE breadth of the Isthmus of Suez, was by no means correctly known to the ancients: on the contrary, they all supposed it to be much wider than it really is. The Arabian geographers fell into the same error; although it be a question that depends on the difference of latitude between the approximating parts of the two seas.

In Herodotus, the source of the error may be traced, in the supposition that mount *Casius*, which was situated on the shore of the Mediterranean sea, at about half a degree to the eastward of Pelusium, lay opposite to the head of the gulf of *Heroopolis* (or of Suez). The same kind of error is observable in Ptolemy; in whose geography mount *Casius* and *Heroopolis* appear nearly under the same meridian, although there is nearly a degree of longitude, as well as of latitude, between them. Pliny, who was, however, ignorant of the distance, appears to have known that the narrowest part of the Isthmus lay between *Pelusium* and *Arsinoe*; which latter stood near the present Suez.

The distance between *Casius* and the head of the gulf, appears to be about 64 G. miles, at this time¹. Some of the ancients allowed 83; and reckoned this

¹ The Red sea is constantly retiring to the south: therefore the distance must alter.

space the breadth of the Isthmus: but it will be found to exceed the truth, by much more than half the actual breadth.

Herodotus allows (in Euterpe 158. and Melpom. 4.) 1000 stadia between the two seas, by the *shortest* passage². This number of stades, on our scale, is equal to about 83 G. miles; which is exactly the space allowed by Ptolemy, between the narrowest part of the land, between the two seas.

Pliny, lib. ii. c. 68, allows 115 MP.; perhaps meant for 920 stades: but he says, lib. v. c. 11. that Agrippa allowed 125 M.P. (that is, 1000 stadia) between Arsinoe, at the head of the Arabian gulf, and Pelusium.

Strabo allows 900 stadia (equal to 77 G. miles on his scale), for the breadth of the Isthmus between Pelusium and Heroopolis: but he says that Posidonius supposed it to be 1500. See pages 491 and 803. Heroopolis, however, lay considerably wide to the north and west of Arsinoe. One is surprised that a great geographer, and one who had visited Egypt, should have obtained no better intelligence.

² He says, (Euterpe, 158.) "From the northern to the southern, or as it is generally called, the *Red* sea, the shortest passage is over mount *Casius*, which divides Egypt from Syria; from whence to the Arabian gulf are a thousand stadia. The way by the canal, on account of the different circumflexions, is considerably longer."

Here he seems to regard the whole water communication between the two seas, a great part of which was by the Nile itself, as THE CANAL. He also says in the same chapter, that "the length of the CANAL was equal to a four days' voyage:" but it appears to have been considerably more.

In effect, the breadth of the Isthmus, between *Suez*, (near the ancient *Arsinoe*,) and the sea coast of the bay of *Farama*, near the site of *Pelusium*, (between which places the breadth of the Isthmus must properly be reckoned) appears to be little more than 48 G. miles. The latitude of Suez is correctly known to be $30^{\circ} 2' 3''$: and M. D'Anville, who ought, from his local situation, to have known more concerning the subject than most men, fixes the latitude of Farama at $30^{\circ} 50'$: consequently, the difference of latitude, which is equal to the breadth of the Isthmus (within a fraction of a mile, as Farama lies only five or six miles to the eastward of the meridian of Suez), is no more than 48 geographic miles; and therefore 56 miles of British standard may be taken for the distance across. M. Volney allows 18 or 19 French leagues; which, at a mean, may be reckoned 57 British miles.

M. D'Anville, probably on a supposition that the statement of Ptolemy was just, allowed 83 G. miles between Casius and Suez; and thus placed the latter in the parallel of $29^{\circ} 45'$, which is 17 min. too far to the south. Ptolemy allowed $29^{\circ} 50'$.

As it may be satisfactory to the reader, as well in respect of the Isthmus, as of the famous canals that intersected it, to have before him the authorities on which the positions in and about the Isthmus, and between it and the Nile, are determined, they are here subjoined in detail.

* Mr. Dalrymple took an observation there in 1776; and Captain White in 1795.

The distance between Cairo and Suez forms the base of this construction. Cairo lies in lat. $30^{\circ} 3'$; Suez in $30^{\circ} 2'$; both by celestial observation; and by extending the line to the site of the *Egyptian* Babylon, an opportunity offers of using the distances in Ptolemy, and in the Antonine Itinerary. Those in the Theodosian Tables are imperfect.

The distance between Cairo and Suez is taken at 32 hours' caravan travelling; of which seven or more lie so wide of the direct line, as to reduce the direct distance to little more than 30 hours. And accordingly, 60,4 G. miles are allowed, on a proportion of two per hour⁴. The site of Babylon, taken for *Fostat*, is about three miles to the SW of Cairo; so that the whole length of the base will be 61,9, or 62 miles. Ptolemy allows 65, but it is well understood that his longitudes are always in excess⁵. He places *Heroum*, or *Heroopolis*, 55 to the east of Babylon, $13\frac{1}{3}$ to the NW of the inmost recess of the Arabian gulf. If these distances be corrected

⁴ The Lake of the Pilgrims lies at a bearing of $E 30^{\circ} N$ from Cairo, and Ajeroud at NW from Suez; whilst the general direction of the road is due east.

⁵ The longitude of Suez, according to the observations of Captain White, in 1795, is $32^{\circ} 28' 30''$ east of Greenwich. The 60,4 G. miles of easting between Cairo and Suez, give $1^{\circ} 9' 45''$ diff. lon. placing Cairo in $31^{\circ} 18' 45''$; but in the *Con. des Temps*, it is given at $31^{\circ} 29'$. M. Niebuhr's Chart of the Delta allows $60\frac{1}{2}$ G. miles of westing between Cairo and Alexandria; equal to $1^{\circ} 10' 30''$ diff. lon.; consequently, Alexandria should be in $30^{\circ} 8' 15''$. And the *Con. des Temps* has actually $27^{\circ} 50' 22''$ east of Paris, or $30^{\circ} 9' 22''$ from Greenwich; differing little more than one minute.

by the rule just given us, they ought to be respectively $52\frac{1}{2}$ and $12\frac{3}{4}$; and Heroopolis will also be found to occupy nearly this position, by the notices afforded by the Antonine Itinerary ⁶.

That Itinerary has a route from the Egyptian Babylon to Pelusium: another from Babylon to Heroopolis; branching out from the former, at a point nearly midway between the two places, and extending onward to *Serapiu*; presumed to have been situated near the head of the gulf at Arsinoe; and a third from Serapiu to Pelusium. From these lines of distance, together with the latitude of Pelusium, (as it is found in M. D'Anville) the breadth of the Isthmus, together with the intermediate positions, on which the lines of the canals depend, may be approximated.

The latitude of *Tinah*, the ancient Pelusium, being given at $30^{\circ} 48'$; and that of *Farama* ⁷, at the mouth of that branch of the Nile, $30^{\circ} 50'$; consequently, the difference of latitude between Suez and Pelusium, is 46 min.: and between the approximating parts of the two seas, 48.

The Antonine Itinerary allows 112 MP. equal to 80 G. miles, in direct distance (when allowance is

⁶ This place is more commonly named *Heroum* than *Heroopolis*, by the ancient geographers. Strabo universally names it so: so do Ptolemy and Pliny generally. The Antonine Itinerary has it *Hero*. Josephus mentions it under the name of Heroopolis, (Antiq. lib. ii. c. 7.) and says, it is the place where the patriarch Jacob, in his way down to Egypt, met his son Joseph. It is situated on the inland road from Egypt to Syria.

⁷ See Abulfeda's Egypt, article *Farama*.

made for the inflexions of the road ; as is to be understood in every instance where the Itinerary distances are applied, in the course of the present discussion), between Babylon and Pelusium⁸. If this distance be extended between the parallels of 30° 0' 30'', and 30° 48' (those of Babylon and Pelusium, respectively), it will place the latter about two miles to the eastward of the meridian of Suez (or Arsinoe). M. D'Anville's construction has 13, and he also allows 86 instead of our 80.

The same Itinerary has 60 MP. equal to 43 G. miles, direct, between Serapiu and Pelusium⁹. The position of the former is unknown ; but, by circumstances, it ought to be near the head of the gulf of Suez ; and to Arsinoe, of course ; but this latter must have been more to the north than Suez, as the sea has retreated, and is constantly retreating to the south : and has even left *Kolzoum*, which was a port in the time of the Caliphs, three quarters of a mile inland¹. Therefore, Arsinoe may have been a full mile to the northward of Suez : and *Patumos*, the place where the canal of Darius entered the gulf,

⁸ See the Itin. pages 162 and 169.—Pelusium 16 Daphno, 18 Tacasarta, 24 Thou, 26 Scenas Veteranorum, 14 Heliu, 12 Babylonia : total 110. But the distance between Scen. Vet. and Heliu is given a second time at 18, which gives a total of 114. The mean is 112.

N. B. The 112 MP. would give near 90, if taken as direct distance.

⁹ Page 170.—Serapiu 8 Thaubasio, 28 Sile, 12 Magdolo, 12 Pelusio : total 60 MP.

¹ This will be spoken of, more at large, in the sequel.

(Euterpe, 158.) still more to the north : or nearer to Pelusium. Arsinoe, then, may have stood at 45 miles only, from Pelusium, which is within two miles of the distance collected from the Itinerary, according to our usual practice of deducting $\frac{1}{3}$ th part for inflexions of the road ; although it is certain that, in the present case, the road has an uncommonly deep bend to the west, through *Salhia*, the *Sile* of the Itinerary. For both Pliny and the modern travellers say, that the track in the direct line across is covered with a deep shifting sand, on which no traces of footsteps remain ; wherefore, in order to keep on the solid ground, it is necessary to make a great circuit to the west². (See the map at page 55.)

The circumstances that lead to a supposition that Serapiu must have been near the head of the Arabian gulf, are the following. It is doubtless implied, in the first instance, that a place to which the *only* road from the capital of Egypt, *eastward*, and from Pelusium *southward*, led, must have been of some importance : and it being situated within the Desert, no other kind of importance can well be ascribed to it, save what arose from its connection with the port of the Red sea.

In the next place, the distance of Serapiu from Heroöpolis, in the Antonine Itinerary, is the same with that of the Arabian gulf in Ptolemy : that is, about 13 G. miles in the latter ; 18 MP. answering,

² Pliny, lib. vi. 29. Volney, who visited Suez, says much the same. Vol. i. lett. 14.

within a fraction, to the same distance, in the Itinerary.

And lastly, the Itinerary is silent respecting Arsinoe; or any other place, at the head of the gulf. Several places of the name of *Serapiu*, appear in the Theodosian Tables, but none near Arsinoe, which is itself noted in the Tables. They were evidently temples of SERAPIS: they are distinguished by the same marks as the temples of Diana, of Hercules, and of Esculapius, in other parts of the Tables; and as those of Isis, within the very same country. In our idea, therefore, no other can be supposed, than that the Serapiu in question was a temple of Serapis, near the port of Arsinoe.

With respect to the trifling difference of two or three miles in the distance, that is not worth regarding in a discussion of this kind.

On the road from Serapiu to Pelusium, *Thaubasio*, at 8 MP. equal to about $6\frac{1}{2}$ G. miles, is the first place that occurs: and this being very little less than the distance of *Ajeroud* from the head of the gulf, *at present*, may perhaps have been the same station under another name: especially as the road must have led in that direction towards Salhia; Ajeroud being to the NW of Suez³. The vestiges of an ancient canal are moreover stated to be visible in this track. Whilst the waters of the Nile continued to run, although they might only fill, perio-

³ This is almost universally allowed. The reports of the distance vary from $3\frac{1}{4}$ to 4 hours. M. Niebuhr gives the bearing at NW nearly: Pococke more northerly. We adhere to M. Niebuhr.

dically, the reservoirs adjacent to the canal, the road would certainly have been contrived to pass by them.

By a reference to the Itinerary, (or see above, page 60,) *Thou* will be found at 54 MP. from Babylon, or $38\frac{1}{2}$ G. miles : 58 MP. or $41\frac{1}{2}$ G. miles, short of Pelusium. At *Thou*, the road turned off to the right, or SE, 24 MP. or $17\frac{1}{4}$ G. miles, to *Hero* (Heroopolis); which sum, added to the 13 of Ptolemy, gives an aggregate of $30\frac{1}{4}$ for the distance of *Thou* from the head of the gulf (at or near the present Suez); or if the 18 MP. of the Itinerary, to Serapiu, be taken, the result will be much the same. *Thou* will then lie about seven miles to the right, or eastward of a line drawn from Babylon to Pelusium; and which is a probable position for it: the modern road, which passes through Salhia, taking much the same direction. And here it is proper to repeat, that the position of Heroopolis, reduced from the authority of the Antonine Itinerary, accords generally with the result arising from the distance in Ptolemy. This result was $52\frac{1}{2}$ G. miles; and by the Itinerary it is 51.

Dr. Pococke (vol. i. p. 131, 132.) gives a position which he names *Haraminteleh*, just where we should look for *Heroum*, or Heroopolis. The Doctor places it in a valley, near the edge of the great plain that opens towards Ajeroud; and at $3\frac{1}{2}$ hours short of that place; whence it may be reckoned about 7 G. miles to the WNW of it; and as Ajeroud is also about $3\frac{1}{2}$ hours or 7 miles short of Suez, the distance agrees very nearly with that in Ptolemy; and also

with the Itinerary, if it be admitted that Serapiu stood near Arsinoe ⁴.

Both Pococke and Shaw took Ajeroud itself for Heroopolis; although we can perceive no ground for such a supposition: for Strabo, who says that it was near Arsinoe, could only speak generally; since its situation appears so clear in Ptolemy. M. D'Anville has gone into the other extreme, and placed it to the west of the *Bitter* lake ⁵.

Salhia, taken for the *Sile* of the Itinerary, is a well known station; as well from its being situated on the last firm ground in Egypt, towards Syria and Arabia, as from its having been in the present times one of the *out-posts* of Buonaparte's army. Salhia is given at 24 MP. or $17\frac{1}{4}$ G. miles, short of Pelusium, from Serapiu: and it lies very little wide of

⁴ The time is thus made out: the first station from Cairo, towards Ajeroud and Suez, was at 18 hours from the former. The second station was Ajeroud, after 16 hours, without stopping. Eleven of these brought Dr. Pococke to *Tearosaid*, seated between very low hills; and one hour and half more to Haraminteleh. Of course $3\frac{1}{2}$ hours remain out of the 16, for the distance of Haraminteleh from Ajeroud.

Dr. Pococke speaks thus of Haraminteleh, p. 131. "There seem to be ruins of a wall built across (the narrow valley) to defend the pass. After I left the place, I thought possibly the canal might pass this way, and that this wall might be the remains of the buildings of one of the flood-gates: we after came into the open plain, and saw Ajeroud," &c.

The distance allowed by Ptolemy, between the *head* of the gulf and Heroopolis, was $13\frac{1}{2}$; here 14 is the result. It must be recollected that the sea has retired to the southward since the time of Ptolemy.

⁵ Concerning this lake much more will be said presently.

the road from Babylon (or say Cairo,) to Pelusium. It should therefore be 88 MP. or 63 G. miles from Babylon; 60 from Cairo. Travellers allow 27 to 28 hours of the caravan, between Cairo and Salhia; which may be taken at 56 miles; whence the distance falls short only 4 miles: and as Thevenot reckoned 10 hours, or 20 miles, between Salhia and a deep inlet of the sea, which appears to be a continuation of the lake *Menzala*, opposite *Tinah*, or Pelusium, we have here the deficiency supplied pretty satisfactorily. Perhaps a part of the deficiency arising on the road from Serapiu to Pelusium, may be accounted for in the same manner.

We shall not pursue the discussion of the road to Syria any farther in this place, than just to mention, that 16 hours beyond the inlet brought Thevenot to *Catieh*, the ancient *Casium*, situated under mount *Casius*; and which is therefore 26 hours beyond Salhia. The Itinerary, p. 152, has only 40 MP. in two equal stations, from *Cassio* to *Pentaschoenon* and thence to *Pelusio*: and these can only be taken at $28\frac{1}{2}$ or 29 G. miles; although the *time* would give considerably more*. The difference may well arise from the sandy nature of the road, which requires a longer time, and more exertion, to travel it; as appears on the whole of the road across this desert; which is composed of loose

* Abulfeda reckons one journey, or 19 G. miles, between *Farama* and *Catieh*. The former being placed at 3 to 4 miles to the north eastward of Pelusium, there should remain $24\frac{1}{2}$ at least for the space between *Farama* and *Catieh*.

sand⁷. Thus, mount Casius, it appears, should not be quite 29 G. miles to the eastward of Pelusium. And this being the case, the space between mount Casius and Suez ought not to be taken higher than 64 G. miles, if any dependence can be placed on the latitude of the mount, as it appears in M. D'Anville, at 30° 58'.

Thus, there appears to be a general agreement between the Roman Itinerary, and the reports of modern travellers, in the line between Babylon (Cairo,) and mount Casius. But, on the road between Serapiu and Pelusium, we have no modern Itinerary to compare with the ancient; and it is certain that, although the distance given by the ancients agrees generally in the aggregate, with the difference of latitude, yet that the *detail* does not agree, if Salhia is to be taken for the *Sile* of the Itinerary; as in our idea, it ought to be.

The positions of *Phaccusa* and *Bubastis*⁸, two towns situated, according to Ptolemy, on or near

⁷ Thevenot reckons 53 hours of the caravan between *Catieh* and *Gaza*. By the diff. lon. between these places, the distance between them in a direct line should be 85 G. miles; or, taking the bend of the coast, the straightest line on which a road can be made between them, is 88. This allows only 1,7 G. miles per hour, whilst 2 is the common caravan rate: besides, the last 7 hours are over solid ground. The Antonine Itinerary has 96 MP. only, or less than the distance on a right line; so that some omission has happened. An observation for the longitude at Gaza, or some other place in its neighbourhood, would remove the doubt that now exists concerning the distances.

⁸ Called indifferently Bubastis, and Bubastus.

the Pelusiac branch of the Nile, are of considerable importance, from their connexion with the canal drawn from the Nile to the Red sea.

From the report of Herodotus, Euterpe, 17, it appears that the Pelusiac branch struck to the eastward, immediately from the *head* of the Delta of the Nile; at which place the Canopic inclined to the west, and the Sebennitic to the north. More will be said concerning these different branches, in the sequel; at present it will be necessary to speak of the Pelusiac branch alone.

Herodotus is by no means distinct in respect of this description; and therefore it can only be concluded generally, that there were *three principal* branches of the Nile, which opened to the sea, at that time (as there are *two* at present;) one or more of which, like the present ones, were subdivided near the sea, so as to form seven openings altogether. The three branches are described to be nearly of equal bulk and depth; and, it may be inferred that the Pelusiac one, although perhaps not equal to the others, must have been of considerable bulk, and preserved the form of a river during the whole year; otherwise, it could neither have been regarded as a bulwark to the kingdom, on the side towards Syria, nor could it have furnished a supply of water for a large canal. At present, it no longer exists as a river, than during the season of the swelling of the Nile.

That this branch had its origin from the head of the Delta, in ancient times, and not, as at present, at a point more than sixteen miles below it, appears certain from the ancient descriptions: but as the

discussion belongs more properly to the subject of the Delta itself, we shall request the reader to take the fact for granted here, since it does not affect the question concerning the place of outlet of the canal, from the Pelusiac river; that part of it appearing to have preserved its ancient place. It is the upper part only, which has either gradually removed downwards, or the portion of water that flows to the eastward, has fallen into the bed of an ancient canal, that led from the Sebennitic branch into the Pelusiac: of which kind of canals, many are known to have existed.

This river is known by the name of *Terraet Mües*, and strikes off from the Damietta branch (or ancient Sebennitic) a little below *Trieb* or *Atrib*, the ancient *Athribis*. The line of direction between the outlet of this branch and Pelusium is E b. N or ENE; and such is the direction of the river itself, in the chart of M. Niebuhr⁹. The town of *Bastus*, taken for *Bubastis*, lies also in this direction, which adds strength to the supposition, that the lower part of the Terraet Mües is in the line of the ancient Pelusiac river; since Bubastis itself was enclosed between two branches of that river. (Euterpe, 138.) It is well known that the outlets of the branches of

⁹ Sanuto has a branch called the river of *Tenes*, meant for *Tineh*, or *Tina*, the modern name of Pelusium; which appears to answer to the Terraet Mües, and to the ancient Pelusiac branch, in the lower part of its course. It indeed terminates in the lake of Menzala in the quarter of Pelusium; but this place is known to have been surrounded by lakes and marshes.

rivers, in alluvial soils, have a tendency to move *downwards*, both from the elevation of the soil, and other circumstances: so that the outlet of the river in question, was doubtless much higher up, in ancient times, than in the present: and the same change has taken place at the head of the Delta itself, as will be proved in the sequel.

Ptolemy places *Phaccusa* at the side of the Pelusiac branch, at $22\frac{1}{2}$ G. miles, and Bubastis at $32\frac{1}{2}$, above Pelusium. The Theodosian tables allow 36 MP. for Phaccusa, equal to 26 geographic; and if Bubastis be only 10 miles above it, as Ptolemy allows, this latter should be 36 only from Pelusium towards Atrib. D'Anville has *Bastus*, probably the same place in modern geography, at $20\frac{1}{2}$ to the east, somewhat north from Atrib; which appears in the chart of M. Niebuhr, in lat. $30^{\circ} 28' 30''$, and at one mile to the east of the meridian of Cairo. But, as the space between Pelusium and Atrib appears to be 65 miles, there is of course a deficiency of nearly 9 miles: and Bastus should rather be 45, than 36, above Pelusium. Phaccusa, by the same rule, will be more than 10 below Bubastis.

Sanuto has *Al Besia* in the place of Bastus, at 17 miles to the NW of *Belbesa*; meaning Bilbeys, a well known station on the road from Cairo to Salhia. Belbesa, in the same geography, is 30 to the NW of Suez; that is, Al Besia is 47 from Suez; agreeing generally with the foregoing construction. Belbesa is, moreover, 30 short of Salhia, in the same author; and by the report of travellers, it is from $13\frac{1}{2}$ to 15

hours travelling : so that the whole may be deemed consistent ¹.

Herodotus says, that the canal from the Nile to the Red sea led out of the Pelusiac branch, *a little above Bubastis* : Strabo says at *Phaccusa*. Pliny, who is silent respecting the *place*, says that the *whole* length of the canal, from the Nile to the Arabian Gulf, was 62 MP. If these are to be taken for the road distance across the country, they produce 44 to 45 G. miles, in direct distance : and the space, on the construction, is 48 miles, according to the *data* adopted for the position of Bubastis. This may be reckoned a near coincidence, taken in a general point of view.

We feel no hesitation in preferring the authority of Herodotus, in this matter ; and for this reason in particular, that Phaccusa appears to be situated too low down the Pelusiac branch, that is, too near the Mediterranean sea to admit of a current of water, from the Nile to the Red sea ; even admitting that the two seas might be on the same level, which is doubted. But Bubastis is actually at equal distances from them, and the canal is said to have been drawn from a point a little *above* Bubastis : so that, on a supposition that the canal was formed on a straighter line than the natural course of the Pelusiac branch

¹ We may doubtless recognise in the *Abbasa* of Abulfeda (Tab. Egypt.) a recent foundation, situated at about a day's journey to the north of Bilbeys, the Al Besia of Sanuto, and the Bubastis of Herodotus.

The *Pibeseth* of Ezekiel, ch. xxx. 17, is taken for the *Bubastis* of the Greeks.

(and which can hardly be doubted), a current, although perhaps not of the requisite strength to keep the canal open, would certainly have run into the Red sea, even admitting that it might have been a few feet higher than the Mediterranean. It is proper to add, that there appears in Sanuto a water communication between the present Damietta branch and Bilbeys; passing by Besia (Bubastis), and which is likely to have been the course of the upper part of the canal of Necho². The canal attributed to Trajan, and described in Ptolemy as the *river of Trajan*; and which led from *Babylon* to *Heroum*, most probably joined that of Necho at Bilbeys, the *Pharbæthus* of D'Anville³.

Thus we have endeavoured to arrange the positions on which the breadth of the Isthmus of Suez, and the extremities of the canal depend. As it is obvious that this arrangement could only be made by a combination of the authorities generally; and as these frequently differ in a small degree from each other, the distances and positions on the map cannot be expected to accord with any particular authority. But a description of the process would be tedious; and of no particular use. The positions

² It will appear presently, that there exists in the present times, during the swelling of the Nile, a water communication between the lake *Menzala*, and the *Bitter* lake, near Heroopolis; the very line of Necho's canal.

³ Abulfeda describes a river that passes by Bilbeys, during the swelling of the Nile, and which appears to be a continuation of the canal of *Kalinb*, named *Abul Menagee*. (Tab. Egypt. Article *Belbais*.)

which determine the *lines* of the canals, will be spoken of in the succeeding part of the Section.

Having disposed of the question respecting the Isthmus itself, we come next to the canals that were drawn across it, in order to unite, by an inland navigation, the two seas that washed the opposite sides of it.

From the relative positions of the head of the Red sea, and Pelusium, at which place the eastern branch of the Nile discharged itself, in ancient times, it appears clearly, that a canal drawn across the narrowest part of the Isthmus must have intersected some part of the course of the Pelusiatic branch; or, at least, must have fallen in at the embouchure of it. (See again, the map at page 55.) Consequently, regard being had to the general geography, and particularly to the course of the eastern branch of the Nile; it will be understood that some part of that branch must be nearer to the Red sea than either Pelusium itself, or any part of the coast near it; had it been advisable to cut it by the shortest line.

But, independent of any other consideration, a current of water from the Nile towards, and into the Red sea, was absolutely necessary, in order to effect the measure of keeping open the mouth of the canal, in that sea; and was no less useful, in respect of a supply of fresh water, throughout a navigation that not only led through, but even terminated in, an arid desert. But it was believed that the Red sea lay on a much higher level than the Mediterranean, or even than Lower Egypt; and which, if true, rendered it a measure of necessity, to draw the

canal from a point in the course of the Nile, high enough to insure a current into the Red sea ; since a contrary course of the stream would both spoil the waters of the Nile, and ruin the agriculture of the lower part of Egypt.

In the next place, the soil of the Isthmus itself is a loose sand, which could not long preserve the form of a canal ; because the country on both sides of the Delta, as we advance from the banks of the Nile, quickly becomes a desert ; being, in effect, a continuation, either of the Arabian, or of the Libyan Desert.

Howsoever the ancients may differ, in respect of the particular line of course of the canal, or in the name of the first projector of it, they appear to be agreed in this point, that the canals made by the Egyptian and Macedonian kings originated from the Pelusiatic (or *Bubastic* ⁴) branch of the Nile ; and that they were by no means drawn in a direct line between the approximating parts of the two seas ; throughout which tract, as has been already said, the soil consists of a deep sand, in which the very tracks of travellers were obliterated by the winds. And, on the other hand, the canals of Trajan (or Adrian), and of the Caliph Omar, both originated from a point near to, or above, the head of the Delta.

We shall here set forth in abstract, the descriptions given by the different authors, who have

⁴ That branch was indifferently called by both those names. Bubastis from its temples, and situation, was a place of great importance : of which, more in the sequel.

written on the subject ; that is, Herodotus, Diodorus, Strabo, and Pliny : referring for particulars to the extracts from the authors themselves, in the note ⁵. It may be remarked, by the way, that

⁵ Herodotus, Euterpe, c. 158, says the following :

“ Psammitichus had a son, whose name was Necos, by whom he was succeeded in his authority. This prince first commenced that canal leading to the Red sea, which Darius, King of Persia, afterwards continued. The length of this canal is equal to a four days' voyage, and is wide enough to admit two triremes abreast. The water enters it from the Nile, a little above the city Bubastis : it terminated in the Red sea, not far from Patumos, an Arabian town. They began to sink this canal in that part of Egypt, which is nearest to Arabia. Contiguous to it is a mountain which stretches towards Memphis, and contains quarries of stone. Commencing at the foot of *this*, it extends from west to east, through a considerable tract of country, and where a mountain opens to the south, is discharged into the Arabian Gulf.”

“ In the prosecution of this work, under Necos, no less than one hundred thousand Egyptians perished. He at length desisted from his undertaking, being admonished by an oracle, that all his labour would turn to the advantage of a barbarian.”

Strabo says, pages 803 and 804, to the following effect. “ There is another canal terminating at the Arabian Gulf, and the city Arsinoe, sometimes called Cleopatris. It passes through those called the *Bitter* lakes, whose waters indeed were formerly bitter, but which have been sweetened, since the cutting of this canal, by an admixture with those of the Nile ; and now abound with delicate fish, and are crowded with water-fowl. This canal was first made by Sesostris, before the war of Troy : some say that the son of Psammitichus (Necho) just began the work, and then died. The first Darius carried on the undertaking, but desisted from finishing it, on a false opinion that, as the Red sea is higher than Egypt, the cutting of the Isthmus between them would necessarily lay that country under water. The Ptolemies

Herodotus and Diodorus both refer the original design, and commencement of the work, to NECOS (or NECHO), the son of Psammitichus; but Strabo and Pliny, to SESOSTRIS. DARIUS HYSTASPES, however, is allowed, on all hands, to have *continued* the work; and, by Herodotus, to have *completed* it:

disproved this error, and by means of weirs or locks, rendered the canal navigable to the sea, without obstruction or inconvenience. Near to Arsinoe stand the cities Heroum and Cleopatris; the latter of which is on that recess of the Arabian gulf, which penetrates into Egypt. Here are harbours, and dwellings, and several canals, with lakes adjacent to them. The canal leading to the Red sea, begins at *Phaccusa*; to which, the village *Philon* is immediately contiguous."

Diodorus, lib. i. ch. 3. "From Pelusium to the Arabian gulf a canal was opened. Necho, son of Psammitichus, first began the work; after him, Darius the Persian carried it on, but left it unfinished, being told that if he cut through the Isthmus, Egypt would be laid under water; for that the Red sea lay higher than Egypt. The last attempt was made by Ptolemy the Second, who succeeded by means of a new canal with sluices, which were opened and shut as convenience required. The canal opened by Ptolemy was called after his name, and fell into the sea at Arsinoe."

Pliny, lib. vi. c. 29. "Sesostris, king of Egypt was the first that planned the scheme of uniting the Red sea with the Nile, by a navigable canal of 62 MP.; which is the space that intervenes between them. In this he was followed by Darius, king of Persia: and also by Ptolemy of Egypt, the second of that name, who made a canal of 100 feet wide by 30 in depth; continuing it $37\frac{1}{2}$ MP. to the *Bitter fountains*. At this point the work was interrupted; for it was found that the Red sea lay higher than the land of Egypt by three cubits; and a general inundation was feared. But some will have it that the true cause was, that if the sea was let into the Nile, the water of it, of which alone the inhabitants drink, would be spoiled."

whilst Diodorus and Strabo agree that **PTOLEMY**, (the second of the name) and he *alone*, was the person who actually completed it.

Diodorus says pointedly, that Darius left it unfinished, fearing the consequences of the *higher* level of the Red sea ; but that Ptolemy made the matter secure, by constructing a sluice, or sluices. Strabo also says, that Ptolemy completed the navigation, without leaving any impediment. Pliny, however, does not allow that it was *ever finished* ; but says that Ptolemy carried it on, as far as to the *Bitter lake*. It was then found, says he, that “ the Red sea was three cubits (say $4\frac{1}{2}$ or 5 feet) higher than the low lands of Egypt ; and, in consequence, the work terminated at that place.” Pliny also makes this observation—that, although the water communication was not completed, yet that the land route was perfect, between Pelusium and other places on the coast of the Mediterranean sea, and the head of the Red sea : and then he describes it *. However,

* Pliny says, lib. vi. 29. that the roads between the two seas are much frequented, on the score of traffic : and that there were three different ones. First, from Pelusium across the sands of the Desert ; in which, unless there be reeds stuck in the ground, to point out the line of direction, the way could not be found ; because the wind blows up the sand and covers the footsteps. The second road begins at two miles beyond M. Casius, and, after sixty more, falls into the former ; passing through the Arabian tribe of *Autei*. The third begins at *Gerto* (or *Adipson*), probably intended for *Gerrha*, near Pelusium ; and also passes through the *Autei*. This is said to be a shorter road by 60 miles, but leading through a rough country, and destitute of water. It has been shewn, that the whole distance directly across the Isthmus is little more than 60 Roman miles.

it must not be omitted, that further on, in the same chapter, he speaks of "the river named *Ptolemæus*, that passes by *Arsinoë*." and which one can hardly refer to any other than the *artificial* river or canal, in question; as surely, no *natural* river passes through that quarter. Strabo also says, that the canal of Ptolemy led into the Red sea at Arsinoë.

If, however, the fact really be, that Darius did *not* complete the canal, it seems extraordinary that Herodotus, who visited Egypt at no great distance of time after Darius, should have been imposed on respecting the existence of a canal, said to have been made by the orders of the same Darius. Nothing can be more positive than his assertion concerning it, in Euterpe, 158: "The length of the canal (says he) is equal to a four days' voyage—the water enters the canal from the Nile—and terminates in the Red sea." Again, he says, "it is discharged into the Arabian gulf." And again, speaking of the same gulf, in Melpom. 39, he says, "into which Darius introduced a channel of the Nile." And yet Diodorus, Strabo, and Pliny, flatly deny it. Who shall decide? If we credit Herodotus, Darius performed it: if Diodorus and Strabo, Ptolemy *alone* executed it: and if Pliny, it never was completed at all! But as it was certainly completed during the caliphate of Omar, in the seventh century, the practicability cannot be questioned. Nor has it been doubted, that either Trajan (or Adrian), opened a canal which, in the upper part, lay much in the same line with that of Omar, (as to the lower part, that seems to have been the same in all.) If, then,

Trajan and Omar executed such works, why might not Darius and Ptolemy have done the same?

Possibly the matter respecting Darius may be thus explained: that his canal, made about two centuries before the time of Ptolemy, had been choaked up at the opening towards the Red sea, so as to give the appearance of its having never been completed⁶. A want of attention to the management of the *back water*, at the opening into the sea, would soon have produced this effect: and the work of Darius might either have been forgot, or Ptolemy might have wished to discredit the belief of the fact.

The authority of Herodotus, individually, must be deemed, at least, equal to that of either of the others; and has also the advantage of being perfectly free from inconsistency: but as his visit to Egypt was so near the time of the transaction itself, it ought, on this ground, to be far superior. Besides, Darius appears to have formed plans of discovery and conquest in the Indian sea and its branches; and his fleet from the Indus, conducted by Scylax, terminated its voyage at Suez (see Melpom. 44.): so that it is very probable he might have persevered in a plan that had for its object the junction of the two seas; and of which, the most difficult part had been accomplished to his hands. It must also be recollected

⁶ It would seem that the canal of Ptolemy did not remain open to the time of Cleopatra, since her ships were dragged across the Isthmus. Plutarch says, the distance was 36 miles, that is, MP. Possibly, that portion of the canal between the Bitter lake and Arsinoe may be the part intended. (Life of Antony).

that he was master of the whole coast of the Mediterranean, from Libya to the Hellespont.

The reason given for his discontinuing the work, does not appear to be of weight, even admitting that the Red sea lay higher than the Mediterranean; for it has been already shewn, in page 74, that the head of the canal was at a sufficient elevation to obtain a current of water into the Red sea⁷. Why then should it not obtain credit, that Darius, as well as Ptolemy and others, completed the navigation; since Herodotus both asserts the fact, and gives a detail of the operation?

We proceed next to the inquiry concerning the position of the *head* of the canal, which originated from the Pelusiatic, (that is, the eastern) branch of the Nile.

Herodotus says, that it was at a point a little above the city of Bubastis; Pliny, at the *Delta*; and Diodorus, *from the Pelusiatic branch*: but without particularising the place. But Strabo says at *Phaccusa*, which, as we have said in page 70, is not more than 26 G. miles above Pelusium⁸: and

⁷ If Bubastis be, as may be supposed, 54 British miles in direct distance from the sea, the level of the surface of the Nile, in the dry season, at that place, may be taken at 27 to 30 feet. The descent of the Ganges, through its alluvions, is about six inches per mile, reckoned on a straight line.

⁸ Pelusium itself stood at a few miles above the *embouchure*, at the side of the lake of *Tanis*, now Menzela. Farama, a modern place, stands near the present *embouchure*, which is common both to the lake, and to the branch called Terraet Mües.

therefore the account appears improbable, from the want of descent, towards the Red sea. We therefore follow the authority of Herodotus, and place the head of the canal a little above Bubastis, which M. D'Anville has recognised in the modern Bastus, or Besia; and which, as we have seen in the geography of Sanuto, has the bed of a river passing by it to the southward, in the supposed line of the ancient canal of Necho.

It has also been remarked, in page 71, that the distance assigned by Pliny, between the places of commencement and termination of the canal, have an agreement with the report of Herodotus, and with the actual geography.

It is proper to observe, in this place, that M. D'Anville, by placing Arsinoe (say Suez) about 17 miles too far to the south, has falsified the relative positions all the way between it and Cairo: as well as between it and the coast of the Mediterranean sea.

It being admitted that the head of the canal was near Bubastis, which stood at about 48 G. miles to the NW of Arsinoe, whilst this latter (taking in a general way, *Suez* for it) is nearly in the same parallel with Cairo, and at about $60\frac{1}{2}$ G. miles to the eastward of it: moreover, that the border of the hilly tract, (*Mokattam*) terminating from the south, extends in a curvilinear direction, between Cairo and Suez; at which latter place it again turns to the south, conforming to the western shore of the Red sea, as before its arrival at Cairo, it did to the course of the Nile: we say, all these circumstances being

considered, the meaning of Herodotus will easily be understood, when he describes the course of the canal, in respect of the hilly tract. "They began (says he) to sink this canal in that part of Egypt which is nearest to Arabia. Contiguous to it is a mountain, that stretches towards Memphis, and contains quarries of stone. Commencing at the *foot* of this (mountain), it extends from *west* to *east*, through a considerable tract of country; and where a mountain *opens to the south*, is discharged into the Arabian gulf." Euterpe, 158.

In the map, facing page 55, will be found a sketch of Lower Egypt, &c. in which the course of the hilly tract, and of the canals, together with the branches of the Nile, are described. There, the border of the hilly tract appears conspicuous, being described from the observations of M. Niebuhr, Pococke, and others: and it is known, from the descriptions of travellers in general, that to the north of this hilly tract, there begins a plain, which extends to the N and NE to the opposite coast of the Mediterranean. It will then be understood that Necho began the canal, in this plain near the foot of the hills, about midway between Cairo and the Red sea, (but considerably to the northward of both, because the hilly tract bends that way), and extended it eastward, inclining to the S, until he came opposite to the head of the Gulf of Suez, where the hills turn rapidly to the south, to form the bed of that gulf; and where the canal, conforming to the edge of the high land, bends also to the south, to enter the head of the gulf: or, according to the words of the historian,

the canal, after "extending from W to E, through a considerable tract of country, the mountain, opening to the south, admits its discharge into the Arabian gulf."

What proportion of the work Necho performed, we are not told ; but it would appear, from the vast number of lives sacrificed in it, that he performed the most arduous part : since a great proportion of it, near the foot of the hills, must have passed through gravelly or rocky soil (this we are warranted to say, from the reports of travellers) : whilst the part contiguous to the course of the Nile, was probably through its alluvions : and between the two, through the sandy, or gravelly, soil of Arabia⁹.

It appears, as well from the geography of Sanuto, as from a very curious fact related by M. Niebuhr, that there is a deep *hollow* in that quarter, between the lake of Menzala, and the border of the hilly tract on the east of Cairo ; and which is rendered manifest by the chain of lakes and watercourses : in other words, that the Nile has not yet filled it up by its depositions, as it has the western quarter of the Delta. It is possible that this state of things may have originally suggested the idea of a canal to the Red sea, when nature had already done so much towards it¹.

⁹ We ought by no means to receive implicitly the reports concerning the particular portions of the canal, that were said to be executed by different princes ; because the accounts themselves are not always consistent.

¹ Strabo, page 804, speaks of several lakes in this quarter ; and which communicated with each other by canals. One, in particular, in the *Sethreitic* province of the Delta ; and which

The passage alluded to in M. Niebuhr (Desc. of Arabia, p. 361), is the following. Speaking of the lake of Menzala, called also *Baheire*, he says, that from this lake, pursuing the course of a branch of the Nile, perhaps the *Terraet Mües*, (concerning which, see above, page 69, and also the map at page 55,) small boats may go within one day's journey of Suez, when the waters of the Nile are high. He was also told that the country was hilly in that quarter: so that no doubt can be entertained that the termination of this navigation was at the lake *Sheib*, or the *Bitter* lake, so often mentioned; and which is actually at the distance of about one journey from Suez. Doubtless this communication lies in the track of the old canals, and passes by the ancient Bubastis and Bilbeys.

Herodotus says, that the line of the canal "was lengthened by different circumflexions;" whence it may be collected, that although the general line was south-east, yet that it first pointed very much to the south; that is, by the shortest line to the solid ground, near the foot of the hills; and which is the course of the present water communication, between *Bastus* (or *Besia*) and Bilbeys. This portion might be 20 G. miles, or more. Then comes the part which skirted the foot of the hills; extending eastward to the Bitter lake and Heroopolis, whose position has been already given, (we conceive satisfac-

may be placed *between* Bubastis and Pelusium; and within the Delta. Consequently, it may be regarded as a part of this *hollow* space; and answers more particularly to the lake through which the *Tenes* river of Sanuto flows.

torily), in page 62, at 13 miles to the north-westward of Arsinoe, at the head of the Red sea : and as Pliny allows $37\frac{1}{2}$ MP. from the head of the canal, (or from Bubastis,) to the *Bitter fountains* (*Bitter lake*, in Strabo, and the Theodosian Tables), out of 62, which is given as the whole distance to Arsinoe, this lake should, of course, be $24\frac{1}{2}$ MP. short of the latter place : and the distance being reckoned by the road, and not on a straight line, will be found to agree. Hence, this lake must lie to the west, and not to the east, of Heroopolis, as M. D'Anville describes.

At this place, according to Pliny (though Herodotus says otherwise) the work of Darius terminated : because it was feared, either that the low lands of Egypt would be inundated by the waters of the Red sea ; or that the waters of the Nile would be rendered unfit to drink. Both Strabo and Pliny agree that the waters of the Nile were led into the Bitter lake : and M. D'Anville finds this Bitter lake in the modern lake of *Shieb* or *Abul Menagee*, situated, according to its geography, at 15 G. miles east, somewhat southerly from Bilbeys : and which position accords with the $37\frac{1}{2}$ MP. of Pliny, given as the length of that part of the canal which extended between the Nile and the Bitter lake. The lake is said to have the same bitter taste at present. M. D'Anville, however, by placing Suez so far to the south, has lengthened the line of the canal to 35 G. miles between Heroopolis and the Red sea, although, by our construction, it should be no more than 13 or 14 ; which would make a wonderful difference in a speculation of opening the canal anew.

The *Trajanus Amnis*² described by Ptolemy, to run between Babylon and Heroopolis, must doubtless have fallen into the same line with that of Necho and Darius, along the foot of the hills : so that he had no occasion to open the ground, but in the space between Babylon and the site of the modern Bilbeys ; a great part of which, as will hereafter appear, lay through a deserted bed of the Pelusiac river. This matter seems perfectly clear : Trajan, as well as Necho, would naturally keep to the plain : and regard being had to the course of the hills, there appears to have been no choice in the line proper for a canal. Whatsoever applies to the subject of Trajan, in this place, applies equally to Amrou, the general of the Caliph Omar, who is known, from the authority of the Arabian historians, to have opened a canal between the capital of Egypt and the head of the Red sea³.

It is well understood that certain parts of these canals, remain still open in the quarter towards the Nile ; which may reasonably be attributed to their usefulness, in watering the adjacent lands, and in supplying the reservoirs ; though without any regard to navigation : and therefore, labour has been regularly applied to keep them clear, in order to receive a portion of the annual increase of the Nile. It appears that there are two canals derived from

² It seems to remain a matter of doubt, whether Trajan or Adrian executed this work. We believe that the sole authority rests with Ptolemy, who says that the river of *Trajan* runs from Babylon to Heroopolis.

³ Elmakin, in particular.

this river, in the quarter of Cairo: the one, which passes through the whole length of the city itself, and thence to a very considerable distance to the north-east ⁴, filling by the way the lake of the Pilgrims: the other, at about four miles lower down, passes through the village of *Kaliub*, and thence by the north of the site of Heliopolis, far into the plain; where it is said to join the other. It seems to have been a matter of doubt, with some, which of these respectively, was the work of the celebrated persons above-mentioned. Savary is of opinion, and quotes Macrizi in his favour, that the canal which runs through Cairo, is the work of *Amrou*, and the one lowest down, that of Trajan. D'Anville was of a contrary opinion; and we agree with him: first, because Ptolemy leads the river of Trajan through Babylon, which, there appears every reason to believe, was situated at Fostat, or Old Cairo; and secondly, because the canal of Kaliub seems to be regarded by the people of the country as the work of the Mahomedans ⁵.

It is confidently reported that the traces of the eastern extremity of the canal are also visible near

⁴ M. Maillet was told that it watered the plain to the extent of 20 leagues, to the north-eastward; p. 73: and M. Niebuhr, that in the season of the floods, it led to *Gaza*: meaning doubtless, by the *Terraet Mues* and lake of Menzala; (Desc. of Arab. p. 362.) Pococke's information was much to the same purpose. Doubtless it leads by Bilbeys and Bubastis, the old course of the canal of Necho.

⁵ The two canals of *Fostat* and *Kaliub* must have joined between *Hank* and Bilbeys; but the place of junction is not known to the Author.

Ajeroud, and thence towards the bay of Suez. Ajeroud, as we have seen, stands at no great distance from the edge of the hilly tract which extends to the NW, from the shore of that bay. Pococke says, Vol. i. p. 134, "Part of the way from *Adjeroute* to Suez, is in a sort of *fossee*, that is thought to be the canal of Trajan; and seems to have run close to the west end of the old city:"—(by which city, it may be concluded *Kolxoum* is intended; although in page 133, he seems to consider these ruins as belonging to the ancient Arsinoe.) M. Niebuhr remarked the same appearance, but was in doubt whether it was a part of a canal, or the bed of a torrent; for, by the herbage growing in it, water must recently have flowed through it; (*Voyage en Arab.* Vol. i. page 204.) But he was told by a Mahomedan of Damietta, that he had seen, in the quarter towards Suez, the canal by which an attempt had been made to join the Nile with the Red sea; (*Desc. Arabia*, p. 361 :) and, in effect, it is a commonly received opinion, that the traces of it are yet visible.

Dr. Pococke also says, (p. 132.) that from Ajeroud he "went on *south* towards Suez, in a sort of hollow ground, in which, as I shall observe, the sea might formerly come." And his observation afterwards (p. 133), is, "if Heroopolis was on the most northern height I have mentioned⁶, the Red sea must have lost ground: and indeed by the situation of places there is a great appearance of it; the val-

⁶ He took *Ajeroud* for Heroopolis.

lies, and the high ground, with *broken cliffs, looking very much like such an alteration,*" &c. M. Niebuhr and others⁷ describe the same kind of hollow, to the extent of four or five miles to the northward of Suez, (Volney says two leagues,) and which appears from all accounts to be the deserted bed of the sea : or rather that bed filled up with sand, to a height above the ordinary level of the sea, in the course of its gradual retreat, since the earliest times⁸.

It may be conceived then, that from the *Bitter* lake, which might be situated five or six miles to the NW of Heroopolis, the course of the canal began to bend more to the southward ; passing the latter place, as well as Ajeroud (taken by us for the *Thaubasio* of the Itinerary), and finally bending still more to the south from Ajeroud, it passes onward to Suez, in which neighbourhood, according to Pococke and others, the traces of a canal still exist. He indeed ascribes the work to Trajan ; but, it may be supposed, that, whatsoever variations may have taken place, in the course of the *upper* part of the canal, (from the various plans of the several monarchs who undertook it,) the part along the foot of the hills, and thence to the Arabian gulf, was in all cases the same, or nearly so ; and more especially in the part in question. M. Niebuhr, in his plan of the Bay of

⁷ Desc. Arabia, p. 354 : and Volney, Vol. i. ch. 14.

⁸ If an opportunity should offer of describing with precision the plans and sections of the ground adjacent to the head of this gulf, they will doubtless afford much satisfaction respecting the subject of the retreat of the sea.

Suez, &c. has marked the same traces, during three or four miles, in a SE by S direction. The people on the spot call it *Mosbeiha*, and *Diisra*.

That the head of this gulf should retire, appears consonant to reason and experience; as well from the operation of the tides, as of the strong south winds, that are known to occasion inundations of the hollow space above mentioned: and although an opposite wind may, in its turn, occasion the sea to retire beyond its accustomed bounds, yet, on flat shores, waters ever deposit more matter than they carry off. The surge also has a perpetual tendency to wash the sand up to a higher point: and even the tide, which rises higher at the inmost recess of this sea, than in any other part, must operate towards the same end^o.

Concerning the superior level of the Red sea, to the Mediterranean, we cannot help regarding the report, as being founded on fact¹; and that the

^o As the highest tide in the Red sea is found at *Suez*; so are those of the Mediterranean, at the upper ends of the gulfs of Venice, and of Kabes. The conformation and position of the land is much the same in all; being such as to arrest, and also to compress the *wave* of the tide moving westward. Accordingly, the land appears to have gained considerably on the sea, in all those places; the wave having a perpetual tendency to cast up sand, or pebbles.

The rise of the tide at new and full moon, is about $3\frac{1}{2}$ feet at Suez; but less than one foot, in the middle part of the Red sea. At the entrance it is 4 feet: see Niebuhr's Desc. of Arabia, at the end. More will be said respecting the tides in the Mediterranean, under the article *Syrtes*.

¹ The words are, "higher than Egypt:" meaning, doubtless,

ancients had ascertained it. Since the waters of the North Atlantic eternally flow into the Mediterranean, this latter ought to be the lowest ; as water can only run from a *higher* to a *lower* place. Again, the Indian sea, of which the Red sea is a branch, runs into the *South* Atlantic, round the Cape of Good Hope, by a constant, copious, and rapid stream : and is more particularly rapid during the southerly monsoon, when the surface of the whole Indian sea is impelled northward by the *general* wind ; and cannot escape, in the form of a current, as in the other oceans, because the land prevents it. At this season, therefore, the difference of level between the Red sea and the Mediterranean, must be greater than at others : and it may have been at this time that the comparison was made. No one can doubt the great difference of levels between the gulf of Mexico and the North Atlantic, although parts of the same ocean.

It has been observed in the course of this discussion, that the head of the canal of Necho, at Bubastis, was equidistant from the two seas ; and that it was doubtless contrived for the purpose of securing a current all the way to the Red sea, to prevent the admixture of sea water with the Nile ; which was distributed through Lower Egypt, by means of a tissue of canals, for the purposes of agriculture, and domestic uses. That the water *ran into* the Red sea is proved from our Author, who says that “ it

the lower parts of the Delta, and which are only just raised above the level of the Mediterranean.

entered the canal from the Nile, and *discharged itself* into the Arabian gulf."

The canal attributed to Trajan, and that of Omar, led out of the Nile at a much higher point than those before-mentioned : that is, above, or near to, the head of the Delta². Perhaps it had been discovered that, in the former ones, the current, from the smallness of the descent, was too weak to cleanse and keep open the bed of the canal, particularly at the place of its discharge into the Red sea, where so many causes operated to choak it up : and that, in consequence, it had remained open but a short space of time. Or it may have originated in the decay of the Pelusiatic branch itself, which rendered it necessary to draw the supply of water from the main river. The elevation of the level at Bubastis has been supposed, in page 80, to be about 30 feet above the level of the Mediterranean, in a course of 54 B. miles : but from the neighbourhood of Cairo (Babylon), although the difference of level from the sea would be increased to about 50 feet, or two-thirds ; the distance by the line of the canal, to the Red sea, would be increased no more than one-third part. Consequently, the descent of the water, in the canals of Trajan and Omar, would be one-third *more* than in that of Necho, &c³. But even

² The head of the Delta was probably opposite to Heliopolis at that time.

³ The modern canal of Alexandria leads out of the western branch of the Nile, at Rahmanie ; from which, to the ancient mouth of *Canopus*, is about $\frac{1}{3}$ less distance than to Alexandria. Admitting that it was made nearly *straight*, the descent of the

with this advantage, the canal does not seem to have continued long navigable ; and if we may judge from circumstances, for there do not appear to be any historical notices relative to the decay of the canals, none of them produced any lasting advantages : otherwise, for what purpose were the land communications established at so vast a labour and expence, between Coptos and Kosire, and between Coptos and Berenice, across the desert of Thebais ; and that so shortly after the completion of Ptolemy's canal ? Nor have we an idea that, at any rate, such a work would be lasting, although it might flatter the vanity of those who executed it : for, it may be remarked, that the canal of Darius did not remain open to the time of Ptolemy Philadelphus ; nor that of the latter, to the time of Cleopatra. And, moreover, that Ptolemy the geographer, does not describe any water communication between the Nile and the Red sea, although he lived within 50 years of the time of Trajan, whose canal or river he extends only the length of Heroopolis. And, finally, that the Theodosian Tables, supposed to have been formed in the second century of our era, are equally silent respecting any such communication. So that there is no reason to believe that any of the ancient canals remained open during a course of two centuries : and that Trajan's was of a very short duration in-

watercourse might be nearly equal to that of the natural course of the river, and was well arranged. At present the water only flows at the time of high Nile : the rise may probably be 9 or 10 feet at that place.

deed, notwithstanding the apparent advantage in point of descent ⁴.

It is proper to observe, that in stating the difference of levels, that of the Nile is taken at its lowest pitch : and as it is known to swell periodically more than 25 British feet at the head of the Delta ⁵, this gave an advantage in favour of the current towards the Red sea ; increasing the quantity of the descent, at *high* Nile, to nearly one half more, than at the season when it is lowest ; and in proportion during the intervals of rising and falling. But as the floods of the river, from about this point to the sea, decrease gradually, so as to form a regular slope down to the level of the latter, a great part of the advantage was lost at Bubastis, where the river cannot be

⁴ The pilot of Solyman's fleet, in 1537, a Genoese, speaks of cisterns at Suez, that had in former times been filled by an aqueduct from the Nile. But he says nothing concerning any navigable canal ; whence it may be inferred, that the canal of Omar had so long ceased to be navigable, that it was forgot : and also, that the waters of the Nile, during its floods, had continued to run to Suez, long after the navigation had ceased. The canal of Alexandria also, has long served as an aqueduct, after it was grown too shallow for navigation : but the existence of the city itself, depending on this supply, there has been a regular system of management, by which it has been kept open. Suez, in latter times, has been of too little importance to demand such an attention towards *its* canal.

⁵ M. Niebuhr's observations prove that the variations in the height of the Nile amount to at least 25 English feet at the height of Cairo. There is little doubt but that it rises very much more in some years.

supposed to swell more than 14 or 15 feet ⁶. The advantage above was, however, attended with a vast increased expence in the article of excavation, which, of course, kept pace with the elevation of the ground raised by the depositions of the floods : and the engineer of Trajan must have dug, in the first instance, to the depth of 25 feet at least, before he came even to the surface of his canal, during the dry season, whilst the engineer of Necho had only 14 or 15 feet to remove. So that the quantity of the excavation in the canal of Trajan, to the point of junction with the old canal, (with the increased length and depth, and the slope of the sides, occasioned by the latter circumstance) must have been nearly double that of Necho and Darius. Perhaps a regard to expence may have regulated, in some degree, the position of the head of the canal of Necho.

It remains, that a word should be said respecting the different reports of the dimensions of the canals. Herodotus, Euterpe, 158, says, that the canal begun by Necho, and completed by Darius Hystaspes, was "wide enough to admit *two triremes abreast*." Strabo, (p. 804.) says, that the canal of Ptolemy, the only one admitted by him to have been executed, was 100 cubits broad, and had a depth sufficient for

⁶ The reader is referred to the Appendix to the Memoir of the map of Hindoostan ; or to the Philosophical Transactions of 1781, for further satisfaction respecting the rise of river floods. It will be found under the article Ganges.

M. Niebuhr says, that the Nile swells about four feet at Rosetta and Damietta. Others say still less, and this appears the most probable.

the largest merchant ships. Pliny, lib. vi. 29, allows only 100 *feet* for the breadth, but 30 for the depth ; which relative proportions are as improbable as the absolute statement of the depth is exaggerated.

* * * Since this Section went to the press, the Author has had the satisfaction to peruse Mr. Browne's Travels in Africa, which, he conceives, will be classed amongst the first performances of the kind. The aids it brings to geography are great, and will probably lead to further discoveries, as it forms a link between Abyssinia on the east, and Bornou on the west. Moreover, it confirms, in a great degree, two positions advanced in the present system of African geography: first, that the Niger *does not* join the Nile: and, secondly, that the most remote head of the Nile is *not* situated in the quarter of Abyssinia, but far to the south-west of it. These remarks belong properly to Section XVI.

Mr. Browne has also a remark, which applies to the present Section. He says (p. 177), that although his guides refused to accompany him, when he wished to view the eastern portion of the canal, which extends from *Birket-es-Sheib* to Suez, as they had previously agreed, yet that "all consented that marks of the canal existed, and some of them arose to his own observation." He adds, that "remains exist of a stone pipe for conveying water to the site of *Kolsúm*, from *Bir Naba*." This is a well, situated some miles to the east of Suez, and on the opposite

side of the shallow inlet of the sea that passes before it. (Niebuhr, vol. i. 178.) One may conclude that this work was unnecessary during the existence of a canal from the Nile.

SECTION XVIII.

GENERAL OBSERVATIONS ON THE FLOODS AND ALLUVIONS OF RIVERS ; APPLIED MORE PARTICULARLY TO THE NILE AND ITS DELTA : WITH THE CHANGES THAT HAVE TAKEN PLACE IN THE FORM AND DIMENSIONS OF THE DELTA ; AND AN INQUIRY CONCERNING THE SITE OF THE CITY OF MEMPHIS.

Preliminary Observations—All capital Rivers do not form Deltas ; these being composed of Alluvions, deposited only in shallow Seas—Two different Degrees of Slope in the beds of Rivers—no arguments required to prove the progress of Alluvions ; but the rate of their progress uncertain—vast length of Time required to form them—Manner in which they are extended into the Sea—Bars of Rivers, how formed, with Remarks on them—The Alluvion, which is originally formed on a Level with the Sea, is raised by the Surge : and afterwards formed into a regular Slope, by the Depositions of the Land Floods—Sea alluvions, slope a different way from those of Rivers—The Delta of the Nile, originally covered with water ; and was afterwards in the state of a Marsh ; according to Herodotus—Sesostris drains the Land by means of Canals, and distributes it—Deltas comprise Tracts of Land, in an imperfect State of Formation—their progress towards Completion, shewn by the Rivers confining themselves to fewer Channels—Some of the Causes that produce the Changes in the Courses of Rivers—Position of Memphis, deduced from ancient authorities, and proved by modern Travellers—A Branch of the Nile turned aside to prepare the ground for it—Report of Herodotus re-

garding this fact, confirmed by appearances—Ancient course of the Nile traced along the foot of the Libyan Hills—Conjecture respecting the Lake Moeris—Proofs of the change of Place of the Apex of the Delta; which has advanced downwards—opposite to Heliopolis, in the time of Strabo—The western arm of the Nile grows shallower—Proofs of the Rise of the soil in Egypt—Remarks on the Inundations of Rivers.

At a time when some new matter respecting the geography of Egypt may reasonably be expected, it would be premature to enter into any other kind of dissertation respecting it, than such as may serve merely to render the present subject intelligible. The construction of the geography of the Delta, &c. that appears in the map, at page 55, is therefore to be regarded as an outline only; though, as such, it is formed of the best materials that we have been able to procure. Those furnished by M. Niebuhr are the first in point of value, as they not only include the whole form of the Delta, and the relative situations of the city of Cairo, the Pyramids, and the sites of Memphis and Heliopolis, to the upper angle of that celebrated tract; but are also adjusted by the aid of celestial observations¹. A chart of the coast, between Alexandria and Rosetta, brought to England by a naval officer of great distinction, from Lord Nelson's fleet, adds very much to the accuracy

¹ See M. Niebuhr's *Voyage en Arabie et en d'autres Pays Circonvoisins*, &c. vol. i. p. 71, &c.—French edition.

The Map, No. VII. at page 55, contains both the ancient and modern Delta; the former according to the ideas of Herodotus, the latter according to the latest observations.

of that part : and for the rest, we have referred to M. D'Anville's map of Egypt.

It has been stated that we do not profess to enter farther into the geography of Egypt, than what relates to the alluvions of the Nile, and certain other particulars, since M. D'Anville has already entered so deeply into the subject of the geography at large, ancient as well as modern ; and, moreover, that when a new body of materials does appear, the subject will require more time and room than can be allotted to any particular division of this work. What we propose, therefore, to undertake in this and the succeeding Section, is to remark the changes in respect of form and extent that have happened to the Delta, since the early times of history, together with the probable cause of those changes : and also to inquire into the position occupied by the city of Memphis, and the change of course of the Nile in its neighbourhood. The Egyptian *Oases*, and the position of the temple of Jupiter Ammon, will form the subject of a future Section.

It is a circumstance well known to the generality of readers, that rivers which deposit great quantities of matter, do also very often separate into two or more branches, previous to their discharge into the sea ; thus forming triangular spaces, which the Greeks aptly called *DELTAS*, from the resemblance they bore to the form of that letter of their alphabet : and also that these Deltas almost universally encroach on the sea, beyond the general, and it may be supposed, original line of the coast.

However, the formation of such Deltas, even, by

rivers of the first magnitude, is by no means universal ; on the contrary, some of them terminate in deep inlets, or *Estuaries*, instead of projecting forms : or, if the expression may be allowed, they terminate *negatively*, instead of *positively*. Of this class may be reckoned the great rivers of the *Amazons*, *Plata*, and the *Oronoko* ; besides many others, which perhaps bring down an equal quantity of the matter of alluvion, with the *Nile*, the *Ganges*, or any other river, that may form the most projecting Delta. This difference appears to be owing to the original conformation of the adjacent coast, and to the depth of the sea beyond it. If the *Estuarium* into which the river discharges itself, and the sea beyond it, are exceedingly deep, the alluvial matter will be lost in the profundity ; whilst in a shallower sea, not only the bed of the inlet itself will be filled up, but the matter will form a projecting tract beyond it. And here it may be observed, that the increase of Deltas will almost necessarily be slower in modern than in ancient times ; since the farther the work advances the deeper the space to be filled up must be.

The Nile is amongst that class of rivers which has the most remarkable, and most prominent Deltas : and its Delta, from the celebrity of the country, of which it forms so considerable a part, has been the theme of history, from the earliest times. Accordingly, we are enabled to trace many of its changes, from positive records ; whilst those of other rivers can only be traced from the appearances which they exhibit.

Before we endeavour to trace these changes, it

will be proper to offer some general observations on the courses of rivers, through their own alluvions ; on the original formation of Deltas, composed of such alluvions ; and on their subsequent changes.

All Deltas, as would appear by the sections of the river banks, as well as of the ground itself, to a great depth, are formed of matter, totally different from that of which the adjacent country consists ; proving that they are the creation of the rivers themselves ; which rivers, having brought down with their floods, vast quantities of mud and sand from the upper lands, deposit them in the lowest place, the sea ; at whose margin the current, which has hitherto impelled them, ceasing, they are deposited by the mere action of gravity.

It is no less certain, that during the progress of forming by its depositions, the *low* land which is to constitute the *future* delta, the river, by its overflows above, also raises such parts of the adjacent countries, as are subject to be overflowed by its waters. And hence it must be conceived, that such rivers must gradually raise their beds : since, in order to run at all, they must have a *continued declivity*, the whole way to the sea : so that the very act of *extending their course*, by forming *new* land in the sea, requires a gradual elevation of the ground the whole way from the margin of the sea, upwards. Thus, alluvial countries must continue to rise, by slow degrees, whilst the alluvions encroach on the sea ; and the rivers themselves continue to overflow and deposit.

The declivity, or slope, of the *new formed* land,

as well as of the *old*, will be regulated by the influence of the level of the sea, on *that* of the *floods* of the river: for although the river may swell 30, or more feet, with the periodical rainy season, in the parts removed from the sea, yet at the point of its junction with the sea, it cannot rise at all; since water cannot be retained in a heap, but must form a common level with the mass with which it mixes. The land flood will therefore form a slope of such a nature, as its gravity, combined with the declivity of the stream, will admit: and it appears from experiment, in another river, (the Ganges) that the slope commences about the head of the Delta. But in the Nile, we are told that it begins much higher; which is very probable, as its Delta is so much smaller than that of the Ganges. Below the point in question, at any given place, the elevation of the periodical flood, as well as the level of the country, bears a pretty just proportion to its distance from the sea. This matter is abundantly proved by experiment, and may be verified with ease.

But as the Delta of the Nile, in common with other tracts of the same nature, was *founded in the sea*; and, in consequence, the course of the river itself must have been prolonged through a tract, which cannot, in the nature of things, be formed (notwithstanding the regular and constant depositions of the floods) into *so great* a slope as that part of its bed, which lies through the original land; it must of necessity happen, that there will be *two different degrees* of slope, in the beds of such rivers: the steepest over the original land; and the

least steep, over what was originally the bed of the sea.

This opinion seems to receive confirmation from the history of the river before us ; although other instances of the like kind could be adduced. For, it will appear, that the head of the Delta of the Nile has absolutely *moved downwards*, several miles, since the date of history : which must, doubtless, be owing in part to the *extension* of the *greater* slope *downwards* by the depositions of the floods ; if we admit them to have raised the *original* land every where equally, and to have formed in a course of time, a *stratum* of vast depth ; by which operation, the angle formed by the termination of the *greater*, and the commencement of the *lesser*, slope, is, in effect, removed downwards. These two slopes may be compared to the slope of a hill, and that of a gently declining plain, at the foot of it. A stream will run down the hill, in a channel nearly straight, but having reached the plain, it wanders, and separates into different branches. If the hill could be removed within the edge of the plain, the place where the windings and separation began, would advance in the same proportion : and thus we regard the two slopes, and their operation.

It appears quite unnecessary to offer any arguments in proof of the assertion, that alluvial countries gradually rise ; or that they gradually encroach on the sea ; since the sea coasts of all Deltas project beyond the general line of the coast : that islands in the sea, have in several instances been joined to the main land, by the matter deposited by rivers : and

that not only history, but ocular demonstration teaches us, that the levels of different alluvial tracts, are very considerably raised². But, it is probable that the progress of the elevation, as well as of the encroachment, has been very much over-rated, in many instances; and in none more than in the case of the Nile, by modern travellers. That the Delta has increased in the part towards the sea, since the days of Herodotus, cannot be questioned; when the increase of *such* coasts, in other countries, are perceptible to the senses. The *quantity* of the increase, in a *given* time, is, however, a *desideratum*: for it happens that the record of the distance of the sea coast from Heliopolis, (in Herodotus) on which an argument has been founded, is quite erroneous³. It

² Pliny has a catalogue of islands that have been thus joined to the main land; lib. ii. c. 85, 89. More will be said concerning the elevation of the soil in the sequel.

³ Our Author says, Euterpe 7, that the distance from Heliopolis to the sea, differs only 15 stadia, from that betwixt Athens and Pisa: 1500 stadia being the exact distance betwixt Heliopolis and the sea. Now, it has appeared in p. 21, vol. i. that Athens and Pisa are distant from each other, 105 G. miles; but Heliopolis is no more at this present time than 88 miles from the Canopic mouth of the Nile, which was probably the part meant (for the sea is, at present, much nearer in some directions); and from the supposed point of the Delta opposite to Heliopolis, 86; which was probably the place reckoned from. Hence, it may be clearly perceived, that no comparison can be drawn between the *present*, and the *former* extent of the Delta; since the number of the stades is wrong in the first instance. (See the reasonings of M. Savary and M. Volney on this fact, in their respective books of Travels.) But M. Volney has, however, made some excellent observations on the Nile, and its inundations and alluvions.

has been noticed before, that the farther the Delta advances, the deeper the sea that is to be filled up ; and consequently the slower the rate of encroachment must be⁴. There seems to be little or no alteration at the *Canopic* and *Pelusiatic* mouths of the Nile, since the time of Herodotus ; which has been owing to the choaking up of those branches ; in which no water now runs, but during the season when the Nile is swoln. But the intermediate part of the coast, between those branches, has doubtless received great additions, by the waters of the Rosetta and Damietta branches : though, perhaps, a few miles only may have been added⁵.

Herodotus says, that *Busiris* (taken for *Abusir*) is situated in the *middle* of the Delta. Euterpe, 59. It is remarkable, that *Abusir* stands so precisely in the middle of the ancient Delta, that there is no sensible difference between the distance at which it lies from Pelusium, and from Canopus, respectively, on the east and west ; and from the site of Cercasora, at the apex of the Delta, and the most prominent points on the Delta, on the N. and S.

There is something very remarkable in this coincidence.

There was a celebrated temple of Isis, *near* Busiris. Herodotus says, *at* Busiris ; but the magnificent remains of the temple at *Baalbeit*, (no doubt those of the temple of Isis) which are particularly described by Pococke, appear to be situated at $4\frac{1}{2}$ G. miles to the NW of Abusir, which stands at the side of the Sebennitic river, as Busiris did. See Pococke, Vol. i. p. 21.

⁴ The sea is now eleven fathoms deep, at a little more than three miles from the shore, between the ancient Canopic and Bolbitine mouths.

⁵ It is by no means certain, how far the city of Bolbitine stood from the sea ; but probably much nearer than the ruins of *Abumander* (taken for Bolbitine) now are ; these being upwards

Considering, then, the extreme flatness of the Delta; the quality of its soil, which is totally different from that of the adjacent countries; its form, which projects so far into the sea, beyond the general line of the coast, on the one hand; and on the other, filling up a space, which, reasoning from appearances, looks like a bay or gulf of the sea; one can hardly doubt that the space which it occupies, was originally a part of the sea, from the neighbourhood of Pelusium, or of mount Casius, to that of Alexandria; and southward to the foot of the hills of the Pyramids, and of Mokattam: which is yet allowing little more for the depth of the bay, from the supposed line of the coast, than the lower point of the Delta now advances beyond it.

No doubt, when we carry back our ideas to the time when the sea washed the base of the rock, on which the Pyramids of Memphis stand, the *present* base of which is washed by the inundation of the Nile, at an elevation, most probably, of 70 or 80 feet above the surface of the same sea; we are lost in the contemplation of the vast interval of time, that must necessarily have elapsed since the foundation of the Delta was first laid. But appearances speak too clear a language to be misunderstood: and we are borne out in the supposition that the Delta has been formed piece-meal, by a process which we shall now endeavour to describe. The following may ac-

of eight G. miles; and M. D'Anville places Bolbitine less than four from the sea. More than twenty marble columns had been dug up from the sand at this place, about the time of M. Niebuhr's visit to Egypt. (Niebuhr, Vol. i. p. 45.)

cordingly be taken as a specimen of the *progress* of alluvion; and which may be seen, in all the different stages of the process, at the mouth of any large river, that deposits rapidly and plentifully.

All rivers preserve, to a certain extent of space, which is proportioned to the velocity of their streams, a current of water, *into* the sea, beyond the points of land, that form their *embouchures*; when, by the continued resistance of the sea, they at last lose their motion. The mud and sand suspended in these waters, during their motion, are deposited, when that motion ceases; or rather, they are gradually deposited, as the current slackens: according to the gravity of the substances that are suspended. This deposition, then, will form a bank or shallow, in the sea; and which will be of a *fan-like* shape, consistently with the form in which the water of the river disperses itself. This bank is of very considerable breadth; and is, of course, constantly on the increase, in height, as well as extension: and the additions constantly made to its *breadth*, will be on the side towards the sea. Until the bank rises up nearly to the surface, the river water, which is continually poured into the sea, escapes freely over it: but when the bank has risen so high, as to inclose the water in a kind of lake, it is then compelled to force its way *through* the bank: although the passage will be both *narrow* and *shallow*, whilst the bank remains under water. This passage is technically named a *BAR*: for such it is, in respect of the channel of the river, although it be the deepest part of the entrance to it.

The position of this opening through the bank, will be regulated by the direction of the stream of the river, at the place where it terminates in the sea; and this direction, again, by the prevalent motion of the sea, along the coast; the mouth of the river always falling obliquely into the line of the *sea* current⁶. Accordingly, when the river enters the *sea obliquely*, the bar will be at one side of the bank; and on that side which is the farthest down, in respect of the sea current. But if the river enter the sea, in a line perpendicular to its shore, the opening, or bar, will be through the *middle* of the bank⁷.

⁶ Here it is proper to observe, that although the *general* motion of the sea is to the *east*, along the coast of Egypt, yet that there is a counter current, from the Rosetta river, through the bay of Abukeir; at whose point, it falls into the general easterly current, which is *thrown* off from the coast by the projecting form of that point.

⁷ The position of the bar of any river may commonly be guessed, by attending to the form of the shores at the *embouchure*. The shore on which the deposition of sediment is going on, will be *flat*, whilst the opposite one is *steep*. It is along the side of the latter, that the deepest channel of the river lies; and in the line of this channel, but without the points that form the mouth of the river, will be the bar. If both the shores are of the same nature, which seldom happens, the bar will lie opposite the middle of the channel. See the Map, No. VII. at page 55.

Rivers, in *general*, have what may be deemed a *bar*, in respect of the depth of the channel within; although they may not rise high enough to impede the navigation: for the increased deposition that takes place, when the current slackens, through the want of declivity, and of shores to retain it, must necessarily form a bank.

Bars of small rivers may be deepened, by means of *stockades* to confine the river current, and prolong it beyond the natural

As the bank rises to the surface, the opening increases in depth and width, until it becomes absolutely a continuation of the course of the river ; since its waters require the same breadth and depth to escape *here*, as in the inner parts of its course. And thus the upper part of the bank becomes gradually a portion of the firm land ; whilst the outer part goes on accumulating, and the *bar* is gradually removed farther out : in effect, there will be a repetition of the same order of things. And hence it will clearly appear, that the bank thus laid in the sea, by the current of the river, is, in reality, the GERM of the growing alluvion.

The bars of certain rivers are swept away every season, by the periodical flood ; which, although it cannot rise to a higher level than the sea, is increased in velocity, by the increase of the body of water above ; and also by *that* of its descent ; as the flood swells to a greater height above, and therefore forms a slope towards the sea. These floods also bring the greatest addition to the growing alluvion : and, not unfrequently, change the direction of the channel, and with it, of course, the position of the bar : their depositions being laid farther out in the sea, by reason of the greater velocity of the current.

Having endeavoured to explain the mode in which the alluvion gains on the sea, we shall next endeavour to explain the manner in which the changes

points of the river's mouth. They would operate to remove the place of deposition farther out, and into deeper water.

and modifications of the existing alluvions are wrought.

The alluvions thus formed in the sea, are, in their original state, *flat*, and are also on a level with the ordinary surface of the sea : but as the surge repels that part of the deposited matter, which rises to the surface, it will be raised somewhat above the level : and as this agency has regularly operated on all the new made alluvion⁸, it must have formed one continued level, but for the interposition of the periodical floods, which have formed it into a regular slope, corresponding with their own⁹.

As the alluvion, then, is extended into the sea, so is its level gradually raised into a slope : an operation that is constantly going forward, but which cannot keep pace with the extension, because every addition to it, occasions a deficiency in the slope.

Until the new formed alluvion was considerably raised, it must have partaken very much of the character given it by Herodotus ; who says, that in

⁸ An *exception* will be stated in the sequel.

⁹ The *sea* alluvions differ from those of *ivers*, in that they form a slope *towards the land* ; the muddy sea, like the muddy river, depositing more matter on the bank, than at a distance from it. But the matter itself may have been first carried by a river into the sea, and afterwards cast up in the most convenient place. It cannot be doubted but that the flat part of the island of Trinidad is formed of the mud of the river *Oronoko*, &c. which the perpetual westerly current, that ranges along the coast, deposits. Romney Marsh appears to owe a part, at least, of its extension, to a like cause. The general motion of the sea is more *easterly*, than *westerly*, along the south coast of England ; as is proved by the general state of the alluvions.

ancient times, "the whole of Egypt, except the province of Thebes, was *one extended marsh*:" Euterpe, 4: and that when "the Nile rose to the height of 8 cubits, all the lands above Memphis were overflowed." (Eut. 13¹.) Both of these traditions clearly point to a state of things that *had* existed; although, probably, at a period too remote to be fixed: for there must have been a time when the Delta was not only a marsh, but was even covered with water; and when the sea must have advanced so near to the *site* of Memphis, as to allow the annual flood to rise no higher than 8 cubits, or 12 to 14 feet, at that place. He afterwards remarks, that it rose 15 or 16 cubits in his time; which was the natural progress of things; as the point of contact of the *land* waters, with those of the *sea*, was removed farther out.

So long as the alluvion of the Delta remained in the state of a marsh, the waters of the Nile, through the want of declivity to carry them off, and the pressure of the sea water from without, when the river was low, may be supposed to have formed a tissue of canals, interspersed with lakes and marshes. But when the land began to acquire some degree of solidity in the upper parts of the Delta, canals, in the nature of drains, would be formed by the hands of men, and dykes raised along the banks of the rivers, in order to exclude the redundant waters

¹ In Euterpe, 15, he says, "the Delta, as I was myself convinced by observation, is still liable to be overflowed, and was formerly *covered with water*."

from the appropriated lands. And this is probably the period referred to by Herodotus, when he describes "the *vast* and *numerous* canals by which Egypt is intersected;" and which he attributes to SESOSTRIS. Euterpe, 108. He was also told, that the same prince made a regular distribution of the lands of Egypt, assigning to each Egyptian a square piece of ground; and that his revenues were drawn from the rent, which every individual annually paid him. (109².)

As the land rose by depositions, the waters would naturally confine themselves to fewer channels; since the land, when in a firmer state, would require a greater force to divide it. At a time when the upper part of the Delta had acquired a degree of firmness and elevation, we learn from our Author, that *three* natural channels, alone, conveyed the waters of the

² The date of this event was doubtless beyond the reach of history; but it has been the general custom, to refer every transaction, however remote, to some person, whose name is celebrated in the history of the country in which it happened.

Herodotus adds, that "whoever was the sufferer by the inundation of the Nile, was permitted to make the king acquainted with his loss. Certain officers were appointed to inquire into the particulars of the injury, that no man might be taxed beyond his ability. It may not be improbable to suppose that this was the origin of geometry, and that the Greeks learned it from hence. As to the *pole*, the *gnomon*, and the division of the day into twelve parts, the Greeks received *them* from the Babylonians." Euterpe, 109.

The like kind of humane and judicious attention to the damages sustained by individuals, by the floods or incroachments of rivers, prevails in Bengal, as in Egypt. The changes of property, by alluvion, are equally attended to.

Nile to the neighbourhood of the sea ; a quarter in which the alluvial land must ever be regarded as in an imperfect state of formation. At present, *two* alone convey it to the same quarter, during the season when the river is not swoln ; and one of these is growing shallow. Can it be doubted, then, that a delta, is (comparatively speaking) land in an imperfect state of formation ; that the natural progress towards completion, is that of the river's confining itself to fewer channels ; and that the inundation, from being a complete mass of water, spread uniformly over the country, becomes merely an overflowing of the river, extending to a certain distance, and forming the country adjacent to each bank, into a slope of several miles in breadth, of which the highest part is the crest of the bank itself ; from the circumstance of its depositing more sediment near the bank, than at a distance from it ? But as long as the alluvion continued too flat to communicate a sufficient velocity to the river, when in its low state, it would continue to separate itself into many different streams, although one of them would probably surpass all the rest in bulk. On the above principle, then, as the *greater* slope, described in page 103, extends itself downwards, the Delta ought to *retire* from it ; or, in other words, the river, in its course through the high level, should flow *unique* ; and the *base* of the Delta should gradually *contract* : and this, we trust, will be satisfactorily proved in the sequel.

It has been said, that in early times, the place of separation of the branches that formed the Delta,

was much higher up than at present. To satisfy ourselves on this head, little more is necessary than to refer to the ancient accounts of the situation of the *apex* of the Delta. This is, indeed, a fact that ought to be impressed on the mind of the reader; as without this conviction, he may not readily give credit to the reports of other changes that have taken place. This is a point, therefore, on which we mean to enlarge; but as, besides the notices concerning its position, in respect of the cities of Heliopolis and Cercasora, which stood very near it, its distance from Memphis is also given. So that it becomes necessary to ascertain the position of this latter, as a point of outset: in the course of which inquiry, several very curious circumstances will arise, respecting the ancient course of the Nile, in that quarter; which will be perfectly illustrative of our subject, at large.

Position of MEMPHIS³.

Herodotus, speaking of the inundations of the Nile, says, Euterpe, 97, as long as the flood continues, vessels do not confine themselves to the channel of the river, but traverse the fields and plains. They who go from *Naucratis* to *Memphis*, pass by the Pyramids: this, however, is not the usual course, which lies through the point of the Delta, and the

³ The reader is referred to Map, No. VIII. for the explanation of this part.

city of *Cercasorus*." Pliny also says, lib. xxxvi. 12: "The Pyramids are situated between Memphis and the Delta." Consequently, by both of these authorities, Memphis was situated *above*, that is, to the southward of the Pyramids.

The Antonine Itinerary gives 24 MP. between *Heliopolis* and Memphis, of which 12 are taken up between Heliopolis and Babylon. See pages 215, 223, vol. i. The former of these places is universally allowed by travellers to have been at *Matarea*; where, amongst other remains, an obelisk is yet standing: and the latter is presumed to have been at *Fostat*, or old Cairo, where the canal attributed to Trajan, led out of the Nile, according to the authority of Ptolemy, and where a canal still exists. These places are distant from each other about $8\frac{1}{2}$ G. miles in direct distance; answering to 12 MP. allowing the windings of the road ⁴.

⁴ Besides the remains at *Matarea*, which are by no means equivocal, in respect of the fact which they indicate, there are other circumstances, which must be allowed in proof of the position. The fountain at Matarea is named *Ain Schams*, or the Fountain of the Sun. A modern town, situated so near to the site of the remains at Matarea, as that the skirts of the two are within a mile and half of each other, is named *Keliub*; which is no doubt the same name with *Heliopolis*, a little changed. The province is also named *Keliubie*; and answers to the ancient prefecturate of Heliopolis; bounded by the Nile, and its Pelusiac branch, on the west and north.

The mound of Heliopolis, according to Dr. Pococke, is about a mile in length by half that breadth. The obelisk, now standing, occupies nearly the centre of it.

Good water is obtained by digging to the depth of a few feet

The site of Memphis, then, ought to be $8\frac{1}{2}$ G. miles from Fostat; or 17 from Heliopolis, *through* Fostat: consequently, its general position is on all hands admitted to be to the *south* of the Pyramids; since these are no more than three or four such miles to the south of the parallel of Fostat. And, following the authorities of Strabo and of Pliny, in addition to that of the Itinerary, the particular position may be ascertained. Here it is necessary to remark, that, as Memphis is said to have been a city of 150 stadia, or at least 14 English miles, in circumference; and that, it may probably have extended along the bank of the Nile, four or five miles, and inland from it, two, or more; it may be somewhat difficult to apply the distances given. It is, however, most probable that the measures in the Roman Itinerary, apply to the centre of Memphis; as it appears to have been the practice of the Romans to reckon the *Milliaria* from the centre of Rome. And again, the measures of Pliny and of Strabo are likely to have been from the *extremity* of the city, towards the Pyramids; when they spoke of the space *between* the Pyramids and Memphis. Ptolemy, perhaps, reckoned his latitude and longitude from the centre.

at Matarea, and in the country between it and the foot of the hills; but towards the river they go deeper to find the springs. (Pococke, Vol. i. p. 24.) It is by no means usual to find good water by digging in Lower Egypt. It may be observed, that Heliopolis is not far from the *visible* base of the hills, and which, it may be supposed, extends much nearer, although covered with alluvion.

Pliny says, that the Pyramids were six MP. from Memphis: Strabo, 40 stadia⁵: and as his stades are of 700 to a degree, the mean of the two accounts will be about $4\frac{1}{4}$ G. miles: and if to these be added $1\frac{1}{4}$ more to the centre of the city, we have an aggregate of $5\frac{1}{2}$ miles; which will intersect the line of distance from Fostat and Heliopolis, at a point somewhat less than three miles to the NNE of *Sakkara*; two from the *present* western bank of the Nile; and in a SE direction from the Pyramids⁶.

The accompanying Map has been constructed chiefly on the authorities found in Niebuhr and Pococke; but with some additions from Norden, Bruce, and Savary; and is extended on a distinct scale, from the head of the Delta, to a point far above the site of

⁵ Pliny, lib. xxxvi. c. 12: and Strabo, pages 807, 808.

⁶ The Pyramids, denominated from *Giza*, are always intended by *the* Pyramids, and Herodotus describes no others. There are pyramids at intervals along the edge of the rising ground, or sand hills, that skirt the western bank of the Nile, all the way from *Giza* to *Meduun*, a space of 26 G. miles. Next to the Pyramids of *Giza*, those of *Sakkara* are the largest, and also the most numerous.

M. Niebuhr places the Pyramids of *Giza* in a direction of W 35 S from *Giza*: and the distance, according to the mean of the different authorities, is about seven G. miles. Most persons have placed them on a *less* southerly bearing: but it may be observed in M. Norden's Views, that the north face of the Great Pyramid is seen from *Deir Eteen*, which is half a league to the S. of old Cairo, or Fostat: consequently this could not be, if the Pyramids, as M. Norden says, lay WSW from *Giza*; as their sides front the four cardinal points. Probably he omitted to allow the variation, which was 12 degrees westerly, in 1762. (M. Niebuhr.) This allowance would bring it near to W 35 S.

Memphis. The positions of *Mokanan*, *Metrahenny*, and *Menf*, which are particularly connected with that of Memphis, are ascertained in part from the text and map of Dr. Pococke; from the report of Mr. Bruce, who also visited them; and from that of Mr. Savary, who collected his information from report only; but which agrees with the others. (See the Map, No. VIII. at page 115.)

It appears then, that *Memf*, *Menf*, or *Menouf*, which is rather a *position*, than a *village*, as perhaps referring to the site of the *latest* remains of Memphis, lies within half a mile (and that to the NE) of the position above pointed out, by the meeting of the two lines of distance from Fostat and the Pyramids⁷. And that this Menf is on the site of Memphis, there is little doubt; since Abulfeda describes the situation of that capital, which existed as a considerable city, so late as the seventh century, when Egypt was conquered by the Mahomedans. This Author says, that it stood at a *short* day's journey from Cairo: and as the site of Menf may be taken at 14 *road* miles from Cairo, it agrees very well⁸.

⁷ M. Savary says, that *Menf* is two (French) leagues to the *southward* of the Pyramids. He speaks of Giza as being on the *east*, the Nile and Menf on the *south*, when looking from the Pyramids. Bruce remarks, that the Pyramids of *Giza* bore about NW, and those of *Sakkara*, SW, when he was at Metrahenny. As Menf lies at no great distance to the W of Metrahenny, this authority for Menf agrees with that of Savary.

⁸ Abulfeda's Egypt, article *Memf*.

To this may be added, that M. Maillet, Dr. Pococke, Mr. Bruce, and Mr. Browne, agree that there are remains which prove the existence of a former city⁹.

⁹ Dr. Pococke, Vol. i. pages 40 and 41.

"I conjecture this city (MEMPHIS) was about *Mokanan* and *Metrahenny*, which are rather nearer to the Pyramids of *Sakkara* than to those of *Giza*; for at *Mokanan* I saw some heaps of rubbish, but much greater about *Metrahenny*, and a great number of grottos cut in the opposite hills, &c.—I observed also a large bank to the southward of *Metrahenny*, running towards *Sakkara*," &c. P. 40.

"I saw near *Sakkara* a sort of wood of the *Acacia* tree: this and *Dendera* being the only places in Egypt, where I saw wood grow without art: and it is possible this wood may be some remains of the ancient groves about Memphis." P. 41.

He crossed the Nile at St. George's Convent, five miles to the S of old Cairo, and going on to the west, "came to the large village of *Mokanan*, with fine plantations of palm trees, and heaps of rubbish to the N of it. About two miles further to the SW we arrived at *Metrahenny*; about this place also I observed several heaps, and a mound, extending a mile N and S, and then towards the Pyramids at *Sakkara*." P. 55, 56.

Mr. Bruce, Vol. i. p. 53.

"All to the W and S of *Mohannan*, we saw great mounds and heaps of rubbish, and calishes (canals) that were not of any length, but were lined with stone, covered and choaked up in many places with earth.

"We saw three large granite pillars, SW of *Mohannan*, and a piece of a broken chest or cistern of granite; but no obelisks, or stones with hieroglyphics; and we thought the greatest part of the ruins seemed to point that way, or more southerly.

"These, our conductor said, were the ruins of *Mimf*, the ancient seat of the Pharaohs, kings of Egypt.

"Memphis, if situated at *Metrahenny*, was in the middle of

We may surely rest the proof of the position of Memphis here : and it is very extraordinary how an

the Pyramids ; three of them to the NW, and above threescore of them to the south." P. 56.

M. Maillet, p. 265.

" The most probable opinion is, that this superb city was built at the entrance of the plain of Mummies ; at the north of which the Pyramids are placed. The prodigious ruins which present themselves in this spot will serve for a long time, as proofs of the greatness of that city, of which they are the remains ; and the incontestible evidences of its true position."——

Again, he says, p. 274, that out of so many superb monuments, &c. " there remain only at present some shapeless ruins of broken columns, of ruined obelisks, and some other buildings fallen to decay, which one still discovers at the *bottom* of a *lake*, when the increase of the Nile is too small to furnish it with its usual supply of water. This circumstance has twice happened during the 17 years of my Consulship : particularly in the year 1697, when the surface of the lake sunk five or six coudees, and discovered at the bottom of this vast reservoir, a kind of city, which excited the admiration of every one. This lake can never be dried up, or drawn off again, as before, because they have neglected to keep up the canal, which served to drain off the water ; and because also, the general bed of the river must have risen like the bed of all other rivers. There are also some heaps of ruins in the plain, of three leagues in width, that separates the northern from the southern Pyramids ; and in which this ancient city extended, from the borders of the lake, towards the Nile, eastward. These are the faint traces of so much magnificence," &c.

Mr. Browne, page 173.

—— " I visited the pleasant site of the ancient Memphis, on the left bank of the Nile, about two hours to the south of *Kahira*, in a plain above three miles broad, between the river and the mountains. The land is now laid down in corn, with date trees towards the mountains. Nothing remains except heaps of rubbish, in which are found pieces of sculptured stone. The

idea ever came to be entertained, that it was situated at Giza. The words of Herodotus alone ought to disprove it, as well those which are quoted above, as in Euterpe, 99, where he says, that " it was situated in the *narrowest* part of Egypt." Let any one cast their eyes on the Map ; this description cannot accord with Giza.

It is very uncertain whether, in the time of Herodotus, the Nile ran exactly in the same bed it now does, in the part about Memphis. It is certain, that Pliny says, that the Nile ran at the distance of 4 MP. only, from the Pyramids ; which seems unlikely, as Memphis was half as far again from them ; although there is no question but that the Nile, in early times, ran between the site of Memphis and the Pyramids. This, however, must have been previous to the foundation of Memphis, and before the operation described by Herodotus ; and which appearances abundantly justify. He says, Euterpe, 99, " MENES, as I was informed, effectually detached the ground on which Memphis stands, from the water. Before his time the river flowed entirely along the sandy mountain on the side of Africa. But this prince, by constructing a bank, at the distance of 100 stadia from Memphis, towards the south, diverted the course of the Nile, and led it,

spot has been surrounded with a canal, and seems every way a more eligible situation than that of Kahira (Cairo). Its extent might be marked by that of the ground where remains are dug up, and which is always overgrown with a kind of thistle, that seems to thrive amongst ruins. It is most conveniently visited from the Coptic Convent called *Abu Nemrus*."

by means of a new canal, through the centre of the mountains. And even at the present period, under the dominion of the Persians, this artificial channel is annually repaired, and regularly defended. If the river were here once to break its banks, the town of Memphis would be inevitably ruined. It was the same Menes, who, upon the solid ground thus rescued from the water, first built the town now known by the name of Memphis, which is situate in the narrowest part of Egypt. To the north and the west of Memphis, he also sunk a *lake*¹, communicating with the river, which, from the situation of the Nile, it was not possible to effect towards the east."

From this description (a part of which, however, is obscure), together with the description of the ground, in Dr. Pococke, and the aid of our own observations, on other capital rivers, it appears very clearly that the Nile, in ancient times, ran through the *Plain of Mummies*, near Sakkara; and thence along the foot of the rising ground, on which the Pyramids of Giza stand; and finally, in the line of the canal of *Beheira*, into the bay of Abukeyr, or Canopus. This appears more particularly, from the following remarks of Dr. Pococke.

He says (Vol. i. p. 40, 41.) that "he saw several large lakes to the north and west of Metrahenny;" and that he thought it probable that "the canal of the Pyramids, and the western canal, some miles beyond Metrahenny, and which at present runs

¹ Perhaps for *lake*, we should rather read *canal*. The old bed of the Nile would leave lakes enough, probably: a canal would have been useful, and such is found there at this day.

under the hills, may, at least, in some parts, be the remains of the ancient bed of the Nile." And again, (page 42.) he describes a great causeway of 1000 yards in length, and 20 feet wide, built of, or faced with, hewn stone, extending across a *hollow* part of the country, and terminating at the distance of a mile to the NE of the Pyramids, where the ground *begins to rise*².

He further says, "the country over which the causeway is built, being *low, and the water lying on it a great while*, seems to be the reason for building it at first, and continuing to keep it in repair." There are included in its length, two bridges, each of about 12 arches of 20 feet wide, on piers of 10 feet; and the bridges are separated by a portion of the causeway. What so probable, as that this hollow part, of 1000 yards in breadth, which is so deep in *all* places, as to require a causeway, and in *some*, as to require bridges which occupy more than 700 feet of space, was the ancient bed of the river? The lakes, too, on the N and W of Metrahenny, are in the line of the same canal: and it appears probable, that advantage was taken of the hollow ground formed by the remains of the ancient bed, in the construction of the canal; whose course seems throughout, to be that which the Nile would naturally take if no impediment had presented itself³.

² See again the Map at page 115.

³ M. Niebuhr also remarks these bridges and causeway, Vol. i. p. 154, 155. He regards the whole work, as of Mahomedan origin; and estimates the length at about 1600 double paces, or

And on the whole, we conceive that the fact mentioned by our Author, respecting the change of course of the Nile, may be understood in the following manner :

That the Nile, having gradually raised its bed too high to allow the *whole* of its waters to run with freedom in the *old* bed, along the foot of the western hills, sought a new one for a *part* of its waters, in a lower place, nearer to the centre of the valley; and thus, by a division of its waters, formed an island. From the date of this separation, the original cause still continuing to operate, the old channel gradually filled up, whilst the new one, in like manner, became deeper. A proof of the length of time required to fill up such a channel (if *ever* it be *completed* at all,) is, that the deserted bed just mentioned, remains visible, although the change happened before the foundation of Memphis! It must, however, be considered, that the mound, by preventing the free access of the Nile water, charged with its mud, has doubtless retarded the operation in this instance.

It may be conceived, that the separation took place at, or above *Dashour*, which stands about 100 stadia above the *centre* of Memphis; and that the mound described by Herodotus, was thrown across the head of the ancient, or western channel, so as to

about a mile and half. He also calls the hollow space, across which it is built, a "*considerable branch* of the Nile."

M. Norden has introduced the causeway and bridges in his View of the Pyramids, Plate XLII. This, and the Plan XLIII. give a very good idea of the ground on which the Pyramids stand, &c.

point the course of the great body of the Nile, into the new channel. M. Savary, indeed, (Vol. i. Letter 26.) reports that the remains of such a work actually exist, between Sakkara and Dashour: but it does not appear that he *saw* it; nor does he quote his authority. The fact is, however, very probable.

According to these ideas, we may conceive that Memphis might have been in some danger, by the breaking of the mound⁴: but by no means can such danger be understood, had the Nile been turned from the valley named *Bahr-bela-ma*, into that of *Memphis*; for had the Nile run in any other valley than that of Memphis, how could the ground of that city have been previously covered by the waters of the Nile? By the expression of "turning the course of the river through the *centre* of the mountains," should therefore most surely be meant, into the *middle*, between the two chains of hills that form the proper valley of Upper Egypt; instead of the course it before held along the foot of the sand hills, that form the western boundary of it.

This seems to be the true meaning of our Historian, or of those who communicated the information to him: and this is rendered the more probable, by the expression, that "before the time of Menes, the river flowed *entirely* along the sandy mountain on the side of Africa." What can be understood,

⁴ Mr. Browne says, that "of the fact of Memphis having been *surrounded* by water, some evidences appear even at this day. Parts of the banks of the canal are yet visible towards the mountains, and at the extremities of the ground, where ruins are distinguishable." Page 173.

but the line of sandy hills, which are known to extend by Sakkara, and along the course of the Nile?

It has certainly been supposed, by some persons, that the Nile, at an early period, passed to the NW, through a hollow space or chasm, in the just mentioned hills; and thence either through the lake Kairun, or by a more direct passage into the gulf of the Arabs. Mr. Browne and Dr. Pococke each remarked a *chasm* in the hills; the former near Sakkara, the latter nearer to the late Kairun⁵; but neither of these are ancient beds of the Nile; for Mr. Browne informs the Author, that "there is absolutely nothing resembling a *course for water*, through the hills between Bedis and Tamieh." This remark is of great importance to our subject, as it tends to remove the doubt, (if any remained) respecting the meaning of Herodotus; and to shew that the change which he had in contemplation, was merely from one part of the valley to another.

The *Bahr-bela-ma* intended by Mr. Browne, p. 170, appears to be a part of the ancient communication (whether natural or artificial) between the canal of Joseph and the lake Kairun; leading out of the former at *Illahon*, (the only communication, indeed, that has ever existed between it and the country of Faiume) but which, in its course towards the lake, now passes more to the west, leaving the bed of the *Bahr-bela-ma* dry.

As *Bahr-bela-ma* (or river *without water*) ap-

⁵ See Dr. Pococke, Vol. i. p. 56: and Mr. Browne, p. 167: also the Map No. VII. at p. 55.

pears to be a general term for a deserted channel of a river, it may be conceived that the one just mentioned, has no connection with the *supposed* bed of a river situated to the west of the Natron lakes. Mr. Browne says, "on the coast, in going to *Siwa*, I recollect no place where a channel could possibly have issued, unless it be near the bottom of the gulf of the Arabs; on the east of which gulf the ground is elevated; but to the S, or S a little west, considerably lower; but hardly enough to persuade me that the river could ever have had its egress at that place; nor are there any visible marks of water having flowed there."

Wheresoever such a river as the Nile has flowed, there ought to have been marks of alluvion; and particularly near the sea. No such, however, appear: on the contrary, the channel of the *Bahr-bela-ma* is said to be formed in part of petrified substances. And with respect to the channels through the sand hills, their levels appear to be far above that of the present river, whose bed must once have been a vast deal lower than it now is. We return to the subject of Memphis, and the head of the Delta⁶.

⁶ It is difficult to believe that the course of the Nile ever lay through the lake of Kairun (*Moeris*): first, because the lake is said to be shut up by elevated lands: and secondly, because it is probable, that in early times, the bed of the Nile was too low to admit its waters to flow into the hollow tract which now contains the lake.

Concerning the lake *Moeris*, the ancient stories are so improbable, that one naturally looks for a more rational account of its formation. Might not the opening of a canal for the purpose of

Having thus established the site of the centre of Memphis, which falls in the parallel of $29^{\circ} 53'$, and its northern skirt in about $29^{\circ} 55'$; (being 8 minutes of latitude south of Cairo, 18 south of the point of the Delta; which latter is fixed by the celestial observation of M. Niebuhr, in $30^{\circ} 13'$); we proceed to examine the ancient authorities for the position of the point of the Delta, in respect of Memphis and Heliopolis.

Herodotus, unluckily, is silent concerning this matter; but it may be inferred from circumstances, that in his time, the point of the Delta was nearly *opposite* to Heliopolis; of which more will be said presently. Had he fixed it positively, it would have given an idea what change, or whether any material one, took place between his time and that of Strabo; an interval of between four and five centuries.

Strabo says, (p. 807) that the head of the Delta was three *schoenes* below Memphis; and these we

filling the hollow space which now contains the lake, be the great work of forming the lake *Moeris*? They might have built the edifices, described by Herodotus (*Euterpe*, 149.) previous to the final influx of the water. The circumstance of the water flowing alternately into the lake, and back again into the Nile, according to the seasons, is perfectly reasonable; since the passage to it was narrow, and the expanse of water very great. Pococke reckons it 50 miles in length by 10 wide: Mr. Browne says, (p. 169.) the length may be between 30 and 40 miles; the breadth nearly 6. "Nothing (says he) can present an appearance so unlike the works of men—On the NE and S is a rocky ridge, in every appearance primeval."

¹ Ptolemy allows $29^{\circ} 50'$.

regard as equal to 12 MP⁸. Pliny says, (lib. v. c. 9.) 15 MP. Taking these respectively, at 10 and 12 G. miles, we come next to Ptolemy, (Africa, Tab. III. Append.) who allows $13\frac{1}{2}$ such miles from the centre of Memphis; or reduced to the same point with the others (the northern skirt, as may be understood), $11\frac{1}{2}$. Here, the utmost given distance of the head of the Delta from Memphis, is 12 G. miles; which is 6 G. miles, or 7 British, *above* the place where it is at present; or, taking a mean of the different reports, nearly 8. There is every reason to suppose, that in the time of Strabo, it was at least as high up as Heliopolis: but in order to make it agree with his report of the distance from Memphis, it ought to have been at the head of the canal of *Keliub*: which is nearly 10, from the present head of the Delta⁹.

The same Author, in his description of Heliopolis, takes occasion to say, page 806, that Eudoxus, who studied astronomy there, had an observatory near it; which observatory was also near to the city of *Cercasora*; at which place the Nile, according to Herodotus, (Euterpe, 15 and 17,) separated, in order to form the Delta.

Although Herodotus describes the city of Cerca-

⁸ See page 25 of this work, where the schoene is fixed at four Roman miles, or 40 stadia nearly.

⁹ The head of the Delta was found by Niebuhr, who took an observation of latitude there in 1764, to be in $30^{\circ} 13'$; whilst Cairo was in $30^{\circ} 3'$. Heliopolis, by reference to the last place, lies in a little above $30^{\circ} 7'$. See Niebuhr, Vol. i. p. 46, 80, and 91.

sora (or Cercasoras) to be opposite to the head of the Delta, yet he does not say *how* it was situated, in respect of Heliopolis. But as he says that the Delta commenced at Cercasora; and as this place is so satisfactorily fixed by Strabo, in a position opposite to Heliopolis, it must be concluded that the head of the Delta was in much the same place in the time of Herodotus, as of Strabo: both of whom wrote from actual observation. However, a slight variation would have passed unregarded; and although Herodotus might have seen the separation at a point a little *above* Cercasora, and Strabo somewhat *below*, no distinction might have been made; and thus, a variation of a mile, or two, might have taken place without any particular remark. Cercasora too, might have extended a great way along the river bank¹.

¹ Strabo also remarks, (p. 806.) that the prefecturate of Heliopolis occupied the Arabian, and that of Litopolis, the Libyan side of the Nile. Ptolemy has the same arrangement with the city of *Latone* for the capital of the latter. In the Antonine Itinerary is found *Letus*, at 20 MP. to the northward of Memphis, or about $14\frac{1}{2}$ G. miles direct. If this distance is to be reckoned from the centre of Memphis, *Letus* will fall nearly opposite to Heliopolis; that is, in the position assigned to Cercasora. It appears not improbable, that *Letus* or *Latone* may have succeeded to *Cercasora*, on the same, or nearly the same site, before the date of the Itinerary; for *Letus* is not mentioned by Strabo, although the prefecturate is; and it may be conceived, that he intended Cercasora for its capital.

Ptolemy places *Latone* *below* the head of the Delta; and the boundary of the prefecturate, of which it is the capital, at the head of the Delta; whilst the prefecturate of Heliopolis is extended above it.

These circumstances furnish at least some *presumptive* evi-

It is worthy of remark, that Diodorus says (lib. i. c. 4.) that Memphis was founded *at* the place of separation of the two branches of the Nile; but whether this relates to the separation above the city, which was done away by the mound; or to a separation lower down, cannot be ascertained; but the assertion is a remarkable one, and had very probably a foundation in truth, considering how long an interval passed between the foundation of Memphis, and the time when the Delta had its commencement opposite to Heliopolis; and that in 1800 years it has advanced seven English miles downwards¹.

The mode by which this downward movement of the derivations from rivers is effected is well understood, and is of two kinds; the one, exceedingly slow, and gradual; the other, more sudden, in respect of its change of place, although the means by which the preparation is accomplished may likewise be slow.

With respect to the first, it must be observed, that in all great rivers, one branch may be regarded as the main trunk, or river, and the rest as derivations; they being always of less bulk and depth than the former, and also separating from it, with an ob-

dence in favour of the change of position of the head of the Delta.

¹ Had the apex of the Delta always remained in the same place, Memphis should indeed be looked for at Giza, opposite to Cairo; where Dr. Shaw, M. Norden, and some others place it. But then it would not have been in the *narrowest* part of Egypt; nor could vessels from Naucratis have passed by the Pyramids in their way to it.

liquity of course, or *elbow*. It is the nature of all water-courses that run through alluvions, and which have also a winding course, to form a *flat* shore on the *projecting* side of each elbow, and a steep one on the *indented* side: the first, being occasioned by the slackness of the current, on the projecting side, which allows the water to deposit its sediment, and thus to form a shelving bank, with shallow water adjacent to it; the latter, by a strong current and deep water, which insensibly corrodes the indented bank. It will easily be understood, that the constant deposition on the shelving side, will cause the parts of it to rise successively to the surface of the water, and to become, in time, *firm* land; and that it must of course compel the stream to borrow on the opposite side, in order to supply the deficiency in its bed, caused by the encroachment of the new land. And hence, the channel of the river must ever be verging towards the indented side.

Now, to apply this to the outlets of the branches of rivers, it is to be considered, that the *upper* angle of separation being in the predicament of the projecting part of the bank just mentioned, the shore will constantly receive an increase there; and that, in consequence, the opposite side, that is, the point of the Delta, (or island), must wear away in the same proportion: for, most infallibly, the weakest part of the stream will ever be at the upper point of separation; because the body of a stream cannot suddenly change its course, to turn round a sharp point, but can only effect its change of direction gradually. So that the water will be, comparatively, *still* near

the point ; and will there deposit its sediments, and thus, the outlet, in effect, will be removed lower and lower down, by very slow degrees³.

This gradual change in the position of the outlet has the natural effect of producing, in time, an entire change in the general direction of the arm of the river that helps to form the Delta: for, as the direction of the upper part must gradually become more and more oblique to that of the main river, it at last becomes *too oblique* to the general slope of the alluvion, (which is regulated by its floods,) to run any longer as it ought, for want of declivity: and then it is that the stream, thus become languid, and more particularly, during the falling state of the river, deposits out of measure, and raises its bed so

³ See the account of the Ganges and Burrampooter rivers, in the Appendix to the Memoir of the Map of Hindoostan; and in the Philosophical Transactions for 1781.

Here it may be proper to remark, (by the bye), that as the outlets of rivers, in alluvial tracts, have a tendency to form *obtuse* angles at the place of separation; so the confluences of such branches have a direct opposite tendency; as they form very *acute* angles at the point of conflux: it being the effect of the mutual repulsion that takes place on the collision of the two streams. This operation will produce a *shallow* at the angle where the water is either *still*, or moves with little velocity. If the *adjunct* stream bear any proportion to the principal one, it will give a new direction to it, partaking more of that of the adjunct.

It happens sometimes, that the acute angle just mentioned is so small, that the confluent rivers appear like one, long before they actually join. M. Condamine says of the river Negro, that for several leagues, it would be taken for an arm of the Amazon, but for the different colour of its waters.

high, that the next year's flood seeks an easier passage, at least for a part of its waters, at a *lower* place. And this is the *sudden* operation alluded to above, as the second of the modes, by which the head of the Delta is removed lower down.

In order to render the latter operation more intelligible, it will be proper to advert to what has been said concerning the *slopes* formed by the overflowing of the rivers, in page 114, sup. It has been said, that the crest of this slope is at the river bank, and that it declines towards the country: so that the several diverging branches of a river have the effect of forming the Delta into alternate *ridges* and *hollows*. Whensoever, therefore, the branches of a river corrode and destroy their banks, which constitute the higher part of the slope, a *part* of their waters, at least, will throw themselves into the hollows, and gradually form them into new channels; which channels, by the direction of the slopes, must needs be parallel, or nearly so, to the old channels: so that every change will be productive of a loss of ground to the Delta.

The period required for this operation is, however, of great length; for it may be conceived that the Canopic branch has not varied, otherwise than *partially*, since it quitted the line of the canal of *Baheire*; which seems to have been before the days of Herodotus. There appears to be little doubt, that whensoever any change happens, it originates in some cause existing *above*, and not *below*; that is, at the *outlet* of the branch from the main river: and that, being once thrown out of its ancient bed, in the

part above, it often happens that it cannot regain its bed at a lower point, for want of a sufficient declivity to give velocity to the stream.

It is said that the *artificial* canal of *Menouf*, which leads obliquely from the Damietta branch, at five or six miles below the head of the Delta, into that of Rosetta, at a place nearly 30 miles below the same point, is now on the increase, whilst that portion of the Rosetta branch which lies parallel to the same canal, is grown very shallow, and continues to do so⁴. It will probably happen then, that by degrees, the upper part of the Rosetta branch will be filled up (for this operation generally goes on when begun); and the canal of Menouf will become the upper part of the Rosetta branch. This, at one step, would remove the Delta five or six miles lower down⁵.

⁴ It appears by the letter of M. Perrée in the Intercepted French Correspondence, that he was compelled to leave the largest part of the flotilla at a place 13 leagues below Cairo (or above *Terane*) after the middle of July (1798); that is, after the Nile had begun to rise. He says, that only vessels of five feet (French) draught of water could pass.

⁵ Since the above was written, Mr. Browne's publication has furnished the following very curious facts and observations respecting these rivers:

In May 1792, the water was so shallow between Terane and Cairo, that a small boat (a *Canjia*) could with difficulty pass. Page 44.

In November 1796, "The waters of the Nile having almost abandoned the eastern branch, which leads to Damiat, pursuing the more direct course of the canal of Menûf, after a neglect of many years, it became necessary to apply a remedy.—The purpose was at length effected by driving piles, and the river returned to its former course." P. 156.

It appears unquestionable, that a like change took place between *Om Waratik* and *Om Dinar*^a, about five miles above the *present* outlet: although some other cause than the want of declivity must be assigned; probably by gradual additions. M. Niebuhr, (who is convinced that the head of the Delta has changed its position), says that the channel between the just mentioned places, and which is eight or nine English miles in length, is not an artificial one, but is very wide, and during the time of high Nile, very deep. Vol. i. p. 84.

Thus far the removal of the outlets of rivers, or the heads of Deltas, downwards, is occasioned by the immediate operation of the current of the river, and its depositions: and, it might be supposed, that if no other cause operated to prevent it, the river would restore itself to its ancient state: and that, whatsoever cause had originally occasioned it to divide, at a certain point, would in time occasion it to break out again there. But here, we conceive that the *extension* of the greater slope, *downward*

Speaking of the *Papyrus* plant in the quarter of Damietta, he says, "Of late years, the channel of the Nile, which ought to flow to Damiatt, pursued the straighter course offered to it by the canal of Menûf, deserted its bed, and left access to the sea water. Hence, the plants of the *Papyrus*, &c. were deprived of the prolific influence of the Nile, and expired in the noxious effluvia of a marine marsh." Pages 353, 354.

^a Edrisi mentions *Om Dinar*, *Daraue*, and *Akass*, which are found in the Map of M. Niebuhr, as places existing in his time near the head of the Delta, but without any indication of their relative position to the head of the Delta.

(as spoken of in page 104), by raising the level of the country, prevents the return of matters to their original state.

It appears then, that the heads of deltas move downwards⁷: and that the consequence of this change is, a contraction of the Delta itself, on the side towards the sea: because that, as the outlets of the branches of rivers have a perpetual tendency to move downwards, so that movement has a tendency to produce an obliquity of course, which destroys the velocity of the stream, and compels it to seek a line of greater declivity; which line can only be found within the former Delta. And finally, that the extension of the *greater* slope, downwards, prevents the branches from breaking out again, in a higher situation. And hence it may be supposed, that the state of a *delta*, is that of an *imperfectly formed* country: and that the progress of matters towards completion, is that of the river forming itself into one channel. That is, from a *mud* bank, it becomes a *marsh*; then a field, intersected by *drains*, and *deeply* inundated at particular periods: and finally, a firm field, subject to *slight* inundations, but without any natural derivations from the river. We do not presume to say under which of these circumstances the lands are best fitted for the use of man, but merely remark, that such are the changes⁸.

⁷ During the Author's residence in Bengal, the head of the Jellinghy river, or western arm of the Delta of the Ganges, moved lower down. It was also the case of other outlets and inlets, of the branches of the Ganges.

⁸ Mr. Browne gives this general idea of the Delta, p. 352,

Before we dismiss the subject of alluvion, it will be proper to say a word more concerning the gradual rise of the soil, by deposition.

The instances that might be given in proof are very numerous, in every quarter; but we shall select a few only. The obelisk yet standing, at Heliopolis, is immersed more than $5\frac{1}{2}$ feet above its *base* (meaning the level of the ground; for it is not known how deep it may go into the ground), in the periodical inundation of the Nile. Now it cannot be supposed that Heliopolis stood originally on ground, that was subject to be overflowed: on the contrary, Strabo says, page 805, that it stood on a *great mound*. The height of the mound is not mentioned, but it must probably have been several feet above the inundation; and now the inundation is several feet above the mound: unless, indeed, Strabo meant the dam or dyke that inclosed it: and even the necessity for that dyke proves the rise of the general level⁹.

Another instance occurs in the digging out of the *sand* the marble columns near Rosetta, mentioned by M. Niebuhr. But the fact is much more pointedly established by what Herodotus says concerning the level of the temple at Bubastis; and by the

“The reader may conceive a vast plain, intersected, in all directions, by minute channels, (the canal of Menûf being almost the only important stream,) by which, and by pumps, the interstices are watered, and brought to the utmost fertility.”

⁹ Possibly, the inundation may have found its way within the dyke, through the entrances described by Dr. Pococke, page 23.

necessity of raising the ground of the different cities of Egypt.

He says then, that during the reign of Sabacus, King of Ethiopia, (who possessed Egypt 50 years,) the ground on which the cities of Egypt stood, was more and more elevated, by manual labour: and that, although they were somewhat raised under the reign of Sesostris, by the digging of canals, they became still more so under the Ethiopian. Moreover, this was more particularly the case with the city of Bubastis, in which stood a famous temple of Diana. This temple, he observes, was in the centre of the town, and in every part a conspicuous object; its situation having never been altered, although every other part of the city had been elevated; Euterpe, 137, 138¹.

Hence we collect, that the gradual elevation of the soil of Egypt was such, as that it was necessary, at that early period (for it was so early as the fifth reign, after the building of the great pyramids), to raise the ground of the cities; which, no doubt, had been originally placed in elevated situations. But by what is said concerning the mode of raising the ground, as well as the appearances that now present themselves, it may be understood, that in *most cases*, the operation was that of raising a lofty dyke round

¹ The description of the temple is worth attention. Its remains do not appear to have been visited by modern travellers. It would be curious to know how far the description of the ground plan of Bubastis, by Herodotus, agrees with modern appearances.

the existing city : and not that the houses were generally taken down, in order to rebuild them on higher ground.

Dr. Pococke remarks, that the site of Heliopolis, as well as those of the temple of Isis, near Busiris ; and of another city which he took for *Bubastis*, but which can be no other than *Athribis*² ; were encompassed by high mounds of earth. See Vol. i. p. 21, 22, 23. Mounds for the villages and towns are universally raised in the lower parts of Bengal, and they often consist of one long narrow street only. One of the mounds seen by Pococke was about a furlong in breadth.

These particulars appear to be perfectly decisive, respecting the gradual rising of the soil. The temple of Isis stood a little below the centre of the Delta : Athribis about one fourth part down, and Heliopolis opposite to the head of it : so that the operation went on every where. But the degree in which it rises, any more than the extent formed in the sea during any given time, must remain undetermined. It may, however, be concluded, that, in early times, the extension of the alluvion was more rapid in proportion to the elevation of the soil, than in latter times.

It is highly probable that those parts of the city

² The site in question is very close to Trieb, or Atrib, and on the Sebennitic branch : whereas Bubastis stood on the Pelusiac branch, which was also called the Bubastic. M. Niebuhr speaks of the remains in question, as belonging to *Athribis* ; Vol. i. p. 79. He names the place *Benha Assel* ; Pococke, *Benelhassar*.

of Memphis, which lay very low, have been covered with deposition: that the lake spoken of by M. Maillet, and which had ruins at the bottom of it, was a part of that ground, surrounded by a dyke: and that the country *without* was raised by deposition, whilst the *inclosed* ground remained a hollow; and finally, that the inundation flowed over it, and formed it into a lake. (See notes to p. 120, 121.)

We might adduce abundance of instances from other countries. When the great reservoir was dug in the city of Calcutta, whole trees were found at a great depth. At Utrecht, at the side of the ancient bed of the Rhine, edifices have been found at a great depth below the present level³.

It may be proper to add a few words also, concerning the overflowing of rivers, in order to shew that, notwithstanding the continued rising of the soil, the river must still continue to overflow.

All rivers and streams must at times overflow, because there is no provision made in their beds for a *sudden* increase of water: for this sudden increase, being immediately diffused over the country, can have no effect in deepening and enlarging the river beds. But where the situation admits of a regular system of dykes, to retain the surplus waters, the

³ Dr. Pococke found the level raised, in almost every place in Upper Egypt, where there are buildings, whose proportions help to shew it. This appeared more particularly at Thebes. But there are no means of knowing, whether it be occasioned by rubbish, by drifting of sand, or by deposition; or whether all the three may not have had a share. The Doctor thought the ground had risen 17 feet, at Thebes.

bed will doubtless be enlarged beyond its natural size. This operation, however, will prevent the general surface of the land from rising; and hence it is, that, mankind, by a too hasty occupation of alluvions, and by tampering with the courses of rivers, have not only entailed endless expence, but brought destruction on their posterity, on occasion of a higher land, or sea, flood than ordinary⁴. Under these circumstances, the whole river bed will rise by degrees, above the surface of the country, in places remote from the sea: and the dyke must be gradually raised, as well as strengthened, to a degree proper for resisting the pressure.

Mr. Browne, who travelled into Upper Egypt, speaks in the following manner concerning the inundations of the Nile generally, page 64:

“In Upper Egypt, the Nile is confined by high banks, which prevent any inundation into the adjacent country. This is also the case in Lower Egypt, except at the extremities of the Delta, where the Nile is never more than a few feet below the surface of the ground, and where the inundation of course takes place.” Again, he says, of the inundation in the Delta, page 352, “As to real inundation

⁴ Thus the Zuyder Zee, or sea of Amsterdam, has been increased chiefly by breaches of the sea, from a small lake, to its present size. It is probable that the admission of so large a portion of the waters of the north branch of the Rhine, into the bed of the Isel, may have originally increased the lake, and prepared the ground for some of the changes that have followed. It was Drusus, the Roman general, who cut a canal from the Rhine to the Isel, between Arnheim and Doesburgh.

on the rise of the Nile, that must be regarded as confined to a *small space*, bordering on the sea." It appears from the dates, that Mr. Browne did not travel during the season of the floods of the Nile, and therefore he must have heard this from others; and we suspect that his information has not been correct. In respect of the Delta, it might relate to the neighbourhood of the principal branches of the river, where the ground is the most raised by depositions: for we have not only seen the like in other countries, but have heard that inundations do really take place over the *lower part* of the Delta generally, though in a greater degree on the eastern, than on the western, side.

As to the question of Upper Egypt, it can only be said that authors, in general, either describe an inundation, or leave us to understand that an inundation does take place there; although some of them admit that it is not universal. Some of the passages that occur in Pococke and Norden are very pointed, as may be seen in the notes, and the existence of an inundation appears to admit of no doubt⁵.

⁵ Dr. Pococke says, p. 79, "We passed several little lakes of water, made by the *overflowings* of the Nile." This was near Achmim, in Upper Egypt. In page 197, speaking of Upper Egypt generally, he says, "If the *hills* are above four or five miles from the Nile, they have villages in the middle, between the hills and the river, which are built on raised ground, where the Nile *overflows*." What follows, in the same place, is curious in respect of the inundations in Lower Egypt.

In p. 199, he says, "It seemed visible to me, that the land of Egypt is lower at a distance from the Nile, than it is near it;

M. Norden also speaks of a dyke generally in Upper Egypt, and describes it in his plan of a part of the ground of Thebes. And from all the circumstances considered, it appears probable that the *present* inundation is effected by means of canals that lead from the river towards the hills, and that the use of the grand dyke is to command the period of the inundation, which might prove inconvenient, if left to operate casually. We are told of various canals that are opened at different periods, depending on contingencies. It is, however, a subject concerning which one naturally wishes to receive more information. It may be remarked, that whatsoever might be the state of the case at present, the *slope*

and I imagined that, in most parts, it appeared to have a gradual descent from the *Nile* to the *hills*; that is, to the foot of them, that may be said to begin at those sandy parts, a mile or two distant from them, which are gentle ascents, and for that reason *are not overflowed* by the Nile." Here, from the circumstance of the *hills*, Upper Egypt must of course be intended; and it is implied in the strongest manner, that the space between the crest of the banks and the base of the hills is overflowed. At the same time, he says, in p. 198 and 200, that *many parts* of Egypt are *not* overflowed.

M. Norden, speaking of the country *above* Cairo, Vol. i. p. 57, says, "These canals they carry quite to the mountains—so that when the Nile increases, its water enters into the canals—when the river has swoln to its pitch, and *diffused* its waters on the surface of the ground, they then think of retaining them for some time, in order that the earth may be sufficiently soaked. For this purpose they make banks, which hinder the water from *flowing off*, &c. At length, when the earth is sufficiently moistened, they cut the bank to facilitate the *removing off* of the *waters*."

described by Dr. Pococke, from the margin of the river bank, to the foot of the hills, plainly proves that inundations have regularly taken place in former times. This is the slope spoken of in pages 114, and 135; and which is found in the course of every river that runs through an alluvial tract.

SECTION XIX.

CONCERNING THE NUMBER, ORDER, AND POSITION OF
THE BRANCHES OF THE NILE, ANCIENT AND MODERN:
WITH VARIOUS PARTICULARS RESPECTING
THEM.

Description of the Branches and Mouths of the Nile, by Herodotus
—Doubts respecting some of the inferior Branches—Seven
navigable Mouths allowed generally by the Ancients—Dimen-
sions of the Delta well known to them—Watch Tower of Per-
seus—Number, Order, and Position of the Branches and
Mouths of the Nile—CANOPIC, the most western—much ancient
History belonging to it, and the city of Canopus—the latter no
less celebrated as the modern Abukeir, the scene of the glorious
Battle of the NILE—Sites of the ancient cities of Metelis, Nau-
cratis, and Hermopolis, ascertained—Error of modern Geo-
graphers respecting the Lake Mareotis—Naucratis, the an-
cient emporium of Egypt—Greek Establishments in Egypt
—Change of Course of the western Branch of the Nile—BOLBI-
TINE, or second of the ancient Branches, become the first—
SEBENNITIC, or third Branch; now the Outlet of the Lake
Brulos—PHATMETIC, or fourth Branch; now the Damietta,
or eastern branch—MENDESIAN and TANITIC, anciently the
fifth and sixth Branches; now only Outlets to the Lake Men-
zala—PELUSIAC, the seventh and last: now a periodical Stream
only—its ancient Course traced—Temple and City of Onias—
Situations of ancient Jewish Establishments in Egypt known—
that of Onias fixed—Lake of Menzala, anciently Tanis—Re-
marks on the Lakes and Hollows, formed in the Alluvions of
Rivers.

It has been said that our Author describes three *natural* branches of the Nile, as existing in his time, and which separated at Cercasora, situated at six or seven miles above the *present* head of the Delta. At this point, says he, Euterpe, 17, "it separates itself into three branches; that which directs itself towards the east, is called the *Pelusian* mouth; the *Canopic* inclines to the west: the third, in one continued line, meets the point of the Delta, which dividing into two parts, it finally pours itself into the sea. This arm is equally celebrated, and not inferior in the depth of its waters; it is called the *Sebenitic* mouth, and this again divides itself into two branches; one is called the *Saitic*, and one the *Mendesian* channel; both empty themselves into the sea. There are two other mouths, the *Bolbitinian* and the *Bucolic*; these are not produced by nature, but by art." He also speaks (in Euterpe, 10.) of "*the five arms of the Nile*;" but it is certain that he has *enumerated* no less than *six*; and later authors, *seven*¹.

As we learn from Strabo, page 802, that the *Tanitic* mouth had also the name of *Saitic* given it, no difficulty arises concerning the identity and positions of the several branches above described, the

¹ Pliny, lib. v. c. 10, speaks of eleven mouths of the Nile, besides four others which he calls *false* ones: but he allows *seven principal* ones only; agreeing thus far with Strabo.

The reader is referred to the Map. No. VII, page 55, for what relates to the Delta of the Nile; and for the general course of this river through Egypt, as well as the countries bordering on Egypt, to No. IX.

Bucolic excepted. But Herodotus seems to have been guilty of an omission in stating *two* mouths only, as the number of subdivisions of the Sebenitic branch: and it is probable that he should have said *three*. For he has in fact described the Sebenitic mouth, most clearly, in saying that it met the point of the Delta; that is at *Bereilos*, or *Brulos*, where also, the Sebennitic mouth of Strabo and Pliny must be looked for. Therefore, he ought, probably, to have said, that besides the *embouchure* properly named Sebennitic, it formed two others; the Mendesian and Saitic, (or Tanitic). For as, after he had spoken of “the *five* arms of the Nile,” he enumerates *six*, it is probable that he had not a distinct idea of the subject. Nor is it extraordinary that a stranger should have been ill informed concerning such a matter, when the Europeans settled on one of the arms of the Ganges remained in total ignorance respecting the mouths of that river for near two centuries. *Seven* was the number of navigable mouths of the Nile, according to the ancients in general.

The *Bucolic* cannot be placed: and he omits the *Phatmetic*, which is known to be represented by the modern *embouchure* of Damietta. This may possibly have been the *Bucolic*.

Concerning the smaller subdivisions of the branches, near the sea, it is said by Strabo (page 801), that many of them were only navigable for boats: so that they may be regarded in the nature of creeks of the sea, rather than as the mouths of rivers: and it may be sufficient for the present purpose, to regard the

three branches above specified, as the *proper arms* of the Nile, in the time of our Author, and which were subdivided, near the sea, into several others. And unless we were to suppose that the Nile carried a greater body of water in ancient times than in the present, one does not easily comprehend how three branches could be so copiously supplied as the descriptions of our Author seem to imply¹.

It is true, that the ancient ships were very flat, and required but a small depth of water, compared with the modern ones: and this makes a great difference in the question. The Canopic branch, whether from its greater depth, and more convenient position, or from political reasons, was originally "the *sole emporium* of Egypt," according to our Author, and strangers were not allowed to enter the other branches. He is silent respecting the navigation of the Sebennitic and Pelusiatic branches, although it cannot be supposed otherwise, than that they were used by the Egyptians themselves: and it may be suspected that he knew very little concerning the lower part of the Delta, since he omits to mention

¹ Mr. Browne's general description of the Nile, and its banks, merits attention, and may be easily referred to, in pages 63 to 66; as also in 352. In particular he says, that "the greatest breadth of this majestic river may be computed at 2000 feet, or about $\frac{1}{3}$ of a geographic mile. Its motion is even slower than the Thames, and does not exceed three miles per hour." This rate has been observed to be that of the Ganges and Burram-pooter (in Phil. Trans. for 1781); and perhaps is that in general of rivers that run through beds formed of their own alluvions. This is to be understood of the season, when they are not swoln by the periodical rains.

some of the great lakes that occupy so considerable a proportion of it³.

The Pelusiatic branch has long ceased to be a perennial stream; the eastern and principal part of the Nile, being now collected in the Damietta, or ancient Sebennitic branch. By this change, about one half of the Delta has been lost, not only in the geographical arrangement, but in its use as cultivable land: the tracts which the river has left, having for the most part become sandy deserts, as has happened on the opposite side, by the change of course of the Canopic branch.

The ideas of the ancients, respecting the dimensions of the base of the Delta, were accurate enough, if we suppose that some spoke of the circuit of the coast, others of the direct line between the two extremities.

Herodotus says (Euterpe, 15), "This region, (that is the Delta) from the Watch Tower erected by Perseus, extends along the coast to the salt-pits of Pelusium, to the length of 40 schoenes." Taking these, as before, at 40 stadia each⁴, we have 1600

³ He knew the lake of *Buto*s (or *Brulos*), for he speaks of it (Euterpe, 156) as being *spacious* and *deep*; but he omits the lake of *Tanis*, as well as that of *Mareotis*.

Respecting the *lotus*, which he says abounded in the inundated parts of Egypt, (Euterpe, 92) it may be suspected that he has confounded together different species of plants. At all events, however, the Egyptian lotus, whatsoever it may be, is totally distinct from that from whence the *Lotophagi* were denominated. More will be said concerning this subject when we speak of the *Lotophagi*.

⁴ See above, pages 24 and 25.

stadia for the extent of the coast. But where was the Watch-tower of Perseus? Strabo places it (page 801), at the eastern point of the Bolbitine branch, on a projecting sandy point. But the Canopic, and not the Bolbitine, mouth terminated the Delta on the west: and there, surely, we ought to look for the tower. The words of Herodotus could have no meaning, unless the tower stood at the opposite extremity of the Delta to Pelusium: and therefore the rocky promontory of *Abukeir*, on which Canopus stood, was probably the site of the Watch-tower of Perseus: and which at present contains a romantic castle and tower, views of which may be seen in Norden, Plate XIV. There appears to be more reason to expect a watch-tower on an elevated rock, near the mouth of the Canopic branch, which led to the grand emporium of Egypt, than at the entrance of an artificial canal, and on a sandy shore. The reading in Strabo may therefore be suspected.

The 1600 stadia, calculated on our mean scale of 718 to a degree, produce nearly 134 G. miles; and the curvilinear border of the coast, between Pelusium and Canopus, measures 138.

Strabo, page 791, allows 1300 stadia; Pliny, lib. v. c. 9, 170 MP, which were probably calculated from stades at 8 to a mile, whence 1360 stades will be the result. The 1300 of Strabo, on his scale of 700, are equal to $111\frac{1}{2}$ G. miles; and those of Pliny, on our mean scale, to $113\frac{1}{2}$: and as it must be conceived, that these measures are intended for the *base* of the Delta, reckoned in a direct line between the two before-mentioned embouchures, they

fall short by a few miles only; the actual length of the base being 117 ⁵.

Herodotus is silent respecting the length of the sides of the Delta: and his statement of the distance between Heliopolis and the sea, is evidently erroneous, as we have shewn. (See the note to page 105). Strabo also omits to give the dimensions: he only says that the sides are not equal to the base, which is true. (Page 701). Pliny allows 146 MP. for the length of the Canopic branch: but it could never have exceeded 89 G. miles; which falls short about 300 stadia of Pliny's calculation.

The present Delta appears to have a base of 61 G. miles, and the sides, 83 and 86, respectively; of which the eastern is the longest; and it is pretty certain, that its area is only equal to one half of the ancient Delta ⁶.

Having thus stated the ideas of our Author, respecting the general subject of the Nile, and its Delta, we shall bring into one point of view, the

⁵ According to our Author, Euterpe, 6, the sea coast, properly reckoned to Egypt, extended from the bay of *Plinthine* which begins about 20 G. miles to the SW of Alexandria, to the lake *Sirbonis*, close to *M. Casius*; and was in length 60 schoenes: that is, half as much again as the sea coast of the Delta. Accordingly, the whole length of the coast of Egypt should be 201 G. miles, by this account: and we measure on the Map at page 55, 199.

Scylax allows 200 stadia between *Pharos* and the bay of *Plinthine*.

⁶ This tract appears to have lost about 70 British miles of its base on the east, 18 on the west: making, in all, a defalcation of 88 B. miles: and leaving about 71 for the present base.

number, and order of position, of the several branches of the Nile; according to the ancient authorities *in general*; together with the modern ones that correspond to them.

I. The CANOPIC branch. This was also named *Heraclean*, from the town of *Heracleum*, situated near the entrance: for the city of Canopus lay beyond it to the *west*⁷; and in the time of Scylax, the site of it was a desert and rocky island. For he says (p. 43), that at the Canopic mouth of the Nile, there is a *desert* island, which they name Canopus; and that the sepulchre of the pilot of Menelaus, by name Canopus, who came from Troy, is shewn there. By this account the city of Canopus was not built till after the time of Scylax, who is supposed to have been cotemporary with Darius Hystaspes. Scylax, who wrote a Periplus for the guidance of navigators, is likely to have been correct in such a matter: and

⁷ Critically speaking, Canopus was situated at 120 stadia, or 12 British miles to the eastward of Alexandria: (Strabo, p. 801: Pliny, 12 MP. lib. v. c. 10.): and the Canopic mouth at 30 stadia, or 3 miles beyond the town: for according to Strabo it was 150 from Alexandria; and the same from the Island of *Pharos*, according to Scylax.

It must be noted, that these measures respect the *ancient* Alexandria, which stood to the *eastward* of the modern city; so that the centres of the two cities were at least two miles asunder. Reckoning from the modern Alexandria, the distances, respectively, should be increased to 14 and 17 miles.

Schedia, a city of note on the Canopic branch, was situated at about 6 G. miles above the entrance. This may be collected from Strabo. A canal connected this part of the Canopic branch with Alexandria.

therefore, the existence of an island, and that island a desert one, seems to be proved ⁸. Since that time, it has been joined to the main by alluvions, which appear to be hardly yet consolidated into firm land. The Island of *Pharos* is also spoken of by Scylax ; since which it has also been joined to the main land, by *sea* alluvions, aided in their operation by a cause-way, built by Alexander : and on which alluvions, the *modern* city of Alexandria stands.

When Paris was driven by contrary winds to Egypt, he came to the Canopian mouth of the Nile, and to *Tarichea* ; and in that situation was a temple of Hercules, which remained to the days of Herodotus. This temple, it may be supposed, afterwards gave name to the town of Heracleum, mentioned by Strabo ; and which might be the same with the Tarichea of Herodotus, four centuries before. To this temple the servants of Paris repaired, and gave the information that led to the seizure of Paris and his effects, and the detaining of Helen. After this, Menelaus himself visited Egypt, and received back his wife, and his effects from the king ⁹.

⁸ It is worthy of remark, that when Nearchus passed the Island of *Ormus*, afterwards famous for its city and emporium, it was uninhabited ; and is described by him as a *desert* island, under the name of *Organa*.

⁹ See Euterpe, 113, *et seq.* where the story of Paris is given ; and which is well worth the attention of the reader. There will also be found our Author's ideas respecting the true history of the war of Troy. It may be remarked, that the conduct of the king of Egypt, in the matter of Paris, was that of a just and magnanimous prince, doing honour to himself and his country at the same time.

Thus the classic importance of Canopus is very great, considered either as a place visited by the heroes of the Trojan war; as the reputed burial-place of the pilot of Menelaus: or in respect of the rank which it held amongst the cities of Egypt¹: but as some ancient places have been so fortunate as to renew their classic importance in modern times, as if to insure the certainty of a longer term of celebrity; so this place, under the modern name of ABUKEIR, has received a new, and perhaps a more lasting impression, of “the stamp of fate,” by its overlooking, like SALAMIS, the scene of a naval battle, which, like that of Salamis, may lead to a decision of the fate of Europe. This most brilliant victory, achieved solely by Britons, Europe felt as her own; and Frenchmen *alone* mourned the defeat. To this spot the genius of Britain conducted his favourite NELSON, who at one blow destroyed the fleet of the enemy, and cut off, for ever, the veteran army of France from her shores.

But what secluded shore of the ocean has not, in its turn, reverberated the BRITISH THUNDER? During

¹ From the Travels of M. Sonnini, just published at Paris, it appears that very considerable remains of CANOPUS are now visible at ABUKEIR: such as broken columns of granite, vast foundations, mutilated statues, and heaps of rubbish. Some of the foundations extend into the sea: and, according to the opinion of M. Sonnini, the sea *gains* on the land there; which is contrary to the ideas of the people of Alexandria respecting that city, as we learn from Mr. Browne. The people of Abu-keir call the ruins those of the city of *Pharaon*, or Pharaoh. See Vol. i. p. 390, *et seq.*; and also the volume of plates for the drawings of the ruins, &c.

the present struggle what walls have resisted, save the WOODEN WALLS of Britain? Nor shall history, although she delights more to record a brilliant victory than the councils that produced it, sink to posterity the name and character of the NAVAL MINISTER, who so successfully directed the great engine of British power! Devoted to her service, his country shall claim him for her own, to the latest times; whilst France shall recognize in the descendant of Marlborough, the hereditary foe to her schemes of ambition and aggrandizement²!

The Canopic was the most westerly of all the branches of the Nile, at the date of our Author's history. Varying its course more and more to the east, in the part near the sea, it formed at last a deep winding, which approached so near to the sea

² The answer of the Delphic oracle to the Athenians, when threatened by Xerxes, (Polymnia, 141) was thought to be so applicable to the circumstances of this country, that the phrase of "wooden walls" is in every one's mouth; without a consciousness of its first application. However, as it respects mere defence, it must be taken in a qualified sense; a fleet operating rather as a systematic check on the designs of the enemy, than as an effective shield or weapon, in the last resort. Its perfection appears, in the subjection of an enemy's foreign possessions, and the protection of our own: but in respect of our own island, its vicinity to the coasts of the enemy is such, that no security can be derived from a fleet, without the presence of a considerable land force also. Neither of the two, singly, to any reasonable extent, would avail; but the compound preparation, although moderate in each department, produces absolute security. By *doubling* the hazard, on the part of the enemy, they compel an increase of preparation, even to unwieldiness, and thus narrow the chance of an opportunity to strike a blow.

in the quarter where Rosetta now stands, that a canal was opened in that direction, and took the name of *Bolbitine*, from a city, whose ruins are found a little above Rosetta, at a place named *Abu-Mander*³. This branch is also named *Tali*, by Ptolemy. Not far below the separation of these branches, stood the city of *Metelis* (according to Ptolemy); whence, it may probably have occupied the position of the present town of *Mentubes*, eight miles above Rosetta; for there M. Niebuhr saw the traces of an ancient city⁴. M. D'Anville places *Metelis* at *Fua*, which is considerably *above* the division of the branches.

The Canopic channel gradually filling up, that of Bolbitine became deeper, until it assumed the place of the former: so that the ancient passage, which at all times led through a series of shallow lakes, is now dry during the low state of the Nile⁵. The present branch that passes by Rosetta, must therefore be regarded, generally, as that of Canopus, in the part between the head of the Delta, and the

³ See above, page 106 of Section xviii.; and M. Niebuhr's *Voyage en Arabie*, &c. Vol. i. p. 45.

⁴ See the same volume, page 78.

The *Milesian* wall spoken of by Strabo, page 801, 802, was probably built across the narrow tract between the Bolbitine branch of the Nile and the lake of *Butos*; so as to oppose any attack from the Egyptians from the side of Memphis. *Butos*, which stood at the side of the lake, was at no great distance from the river, so that the extent of the wall need not to have been very great.

⁵ The course of the ancient river is well known to the people of the country, who point it out to travellers.

outlet of the branch that leads to the bay of Abu-keir. However, it has doubtless undergone many changes, in particular parts of its course; and is also *shortened* by the change of place of the apex of the Delta.

At the side of this branch were also situated, amongst others, the ancient cities of NAUCRATIS, the emporium of Egypt, and *Hermopolis* the lesser. It will be proper to speak of both of these situations, as we differ exceedingly from D'Anville concerning the latter; and as the former appears to be recognised in the ruins seen by M. Niebuhr at *Salhadjar*.

M. D'Anville places Hermopolis at *Damankur*, a town situated on the canal of Alexandria, about 10 or 12 miles below its outlet from the Canopic branch at *Rahmany*. The ancients however place it, not at the side of the canal, but at the river itself⁶: and this is justified by the Antonine Itinerary, and by its application to the actual geography. Hermopolis, therefore, should be placed at Rahmany.

The Antonine Itinerary allows 159 MP. between Alexandria and Memphis: and the Theodosian Tables have the same number. The road, in the former, leads through *Chereu*, *Hermopolis*, *Andropolis*, *Niciu*, and *Latopolis*⁷; and the distance will be found to agree, if reckoned through Rahmany, considered as Hermopolis: as will that in the Tables, if reckoned through *Rahmany* and *Naucratis*.

⁶ Ptolemy, Africa, Tab. III. Appendix: and Strabo, page 803.

⁷ Alexandria 24 Chereu 20 Hermupoli 21 Andro 31 Niciu 28 Letus 20 Memphi: total, 144 only; but in the road from

There appears to have been a necessity for the angle in the road, at Hermopolis, because of the intervention of the lake *Mareotis*; which we conceive to have extended in a different direction from that assigned to it by M. D'Anville. For Strabo allows it a length of 300 stadia, or about 30 British miles, with a breadth of 100 stadia, or 10 miles: and he also speaks of several canals, which led to it, from the Canopic branch of the Nile. Moreover, he speaks of this lake and its islands, as lying on the *right* of those who go from *Schedia* to *Memphis**. A slight inspection of the Map will shew, that the lake in question must have extended to the ESE, from Alexandria; for had it extended to the SW, appearances would manifestly shew its site, by a soil differing totally from the natural soil of Libya. Mr.

Pelusium to Alexandria 36 are allowed between Andropolis and Hermopolis: as,

Andro 12 Nithine 24 Hermupoli: and the corrected total will be 159. See Ant. Itin. pages 154, 155, 156.

The Theodosian Table has, Alexandria 24, Melcati 32, Naucrati 43, Niciu 36, Auleu 24 Memphis: total also 159.

Although the *totals* agree with each other, and with the actual geography, yet the reader will perceive a considerable difference between the *details*.

* Strabo, page 803.

Pliny, lib. v. c. 10, allows 30 Roman miles for the extent of the lake Mareotis; or 60 in compass; but he says that some allowed it a much greater extent. No doubt, it had been constantly on the decrease: it having now totally disappeared, and the site of it become a plain, with palm trees in divers places.

Ptolemy allows it a length of 34 G. miles; which would reach upwards to the parallels of Naucratis and Sais; and beyond the ruins which we take for those of Momemphis.

Browne says, " In my excursions about Alexandria, the low ground and some verdure, which I considered as marking the former extent of the lake Mareotis, appeared to me to reach SW, a league; or perhaps a league and half, and no more. In going along the coast we saw little or nothing that could assist in fixing its extent."

Of necessity then, both the land road, as well as the canal which supplied the cisterns of Alexandria with the water of the Nile (for that of the lake we may suppose was not proper for keeping), must have led by the north of the lake, and at a great angle with the line of direction between Alexandria and Memphis. The *navigation* from the Nile to Alexandria was no doubt by those canals described by Strabo, from a point above Hermopolis, to the lake Mareotis; which might approach within a few miles of the Nile, on one side, and close to the walls of Alexandria, on the other⁹. There appears, therefore, no necessity for supposing a canal navigation of more than 35 British miles, between the Canopic branch and the lake Mareotis; as M. D'Anville describes. The use of this lake, as a medium of direct communication, with the Delta, and Upper Egypt, without the hazard of putting to sea, was, no doubt, one of the advantages reckoned upon by Alexander, in his new establishment¹.

⁹ Scylax says that the distance from the lake to the Island of Pharos was very small.

¹ It has been said, that Herodotus does not appear to have heard of the lake *Mareotis*. It must be recollected that he visited Egypt before the foundation of Alexandria; and when

To return to Hermopolis, and the road to Memphis—Hermopolis is 44 MP. from Alexandria, and therefore agrees in distance, to Rahmany, at the side of the Canopic branch. *Karavi*, which lies between, agrees to the *Chereu* of the Itinerary, 24 MP. from Alexandria: and at least seems to prove that the first 24 miles lay in the line towards Rahmany².

Sah, the site of the ancient *Sais*, stands, according to M. D'Anville, at five miles to the east of *Labben*, a position in M. Niebuhr's Chart. Strabo says, page 803, that *Naucratis* stood at two schœnes by water from Sais: and as the latter lay inland, to the east, from the Canopic river, but the former on that river itself, the water passage must have been by a canal, crossing the Delta: and as the canals at present run to the NW, at that very place, *Naucratis* should have been to the NW of Sais: and at the distance of about eight miles from it.

Again, *Naucratis*, by the Theodosian Tables, is 56 MP. from Alexandria, towards Memphis: and as this road must also be supposed to lie through Rahmany (taken for Hermopolis), *Naucratis* should be 12 MP. beyond Hermopolis, towards Memphis. In other words, Sais and Hermopolis should be 20 MP.

the lake in question had not excited the attention of the Greeks, as it afterwards did, on occasion of its connection with that city. Probably, it was even more extensive in the time of Herodotus, than of Strabo; and might have approached very near to the Canopic branch.

² The march of Buonaparte from Alexandria towards Cairo, was along the road described in the Roman Itinerary to Hermopolis, or Rahmany.

asunder : of which, 12 are between Hermopolis and Naucratis : eight between the latter and Sais : and the construction, founded on the above-mentioned *data*, allows 22 : which is sufficiently exact for the purpose in hand. Naucratis should then be 103 MP. by the road, from Memphis, and the construction actually allows 101.

This position of Naucratis falls precisely at Salhadjar, about 28 G. miles above Rosetta ; at the east side of the river, or within the Delta. M. Niebuhr says, Vol. i. p. 78, that there are indications of an ancient and extensive city at that place ; and that, in consequence, he visited the spot. But he found little to repay his curiosity, although he satisfied himself as to the fact of the remains : *he* does not, however, appear to have referred them to Naucratis. Such are the remains of this once celebrated emporium, the seat of wealth and beauty, and the resort of merchants from every quarter ! Even Alexandria, which succeeded it, has long lost its consequence.

“ Formerly (says our Historian) Naucratis was the sole emporium of Egypt. Whoever came to any other than the Canopian mouth of the Nile, was compelled to swear that it was entirely accidental ; and was in the same vessel obliged to go thither. Naucratis was held in such great estimation, that if contrary winds prevented a passage, the merchant was obliged to leave his goods on board the common boats of the river, and carry them round the Delta to Naucratis ;” Euterpe, 179. Perhaps this restriction originated in the same jealousy, which in the empire of China limits the trade of Europeans to

the port of Canton : and one cannot help remarking how parallel the two cases are, in this respect. The Greeks were permitted to have a commercial settlement at Naucratis, and they were allowed places for the construction of temples for their religious rites.

Strabo attributes to the Milesians the foundation of the city Naucratis, after they had established themselves near the mouth of the Bolbitine branch, in the reign of Psammitichus : (pages 801, 802.)

Amasis is said to have been " very partial to the Greeks, and to have favoured them upon every occasion. Such as wished to have a regular communication with Egypt, he permitted to have a settlement at Naucratis. To others, who did not require a fixed residence, as being only engaged in occasional commerce, he assigned certain places for the construction of altars, and the performance of their religious rites ;" Euterpe, 187. Amasis reigned at about a century after Psammitichus, and was of the city of *Siuph*, in the district of Sais ; (172.) *Sauafe* is perhaps the place intended ³.

³ Sais was a city of very great note, far down the Delta, and towards the Canopic branch. Here the kings of Egypt had a magnificent palace ; Euterpe, 163, 169. Edrisi mentions it under the name of *Sah*.

Some circumstances in the history of Amasis, furnish a general idea of the position of *Momemphis*, at which place the battle that transferred the dominion of Egypt from APRIES to AMASIS was fought. From Euterpe, 161, 163, 169, it would appear to have been at no great distance from *Sais*, on the road to *Cyrene*. The ruins of a city are noticed at 12 G. miles to the westward of

It appears from the same book (180), that on occasion of the destruction of the temple of Delphi, by fire, collections were made for the purpose of rebuilding it: and that the Greeks who resided in Egypt made a collection of 20 minæ. Thus may be seen in all ages, the same patriotism and generosity towards the mother country, in their foreign commercial establishments. The British subjects residing in the East and West Indies have manifested the same spirit in these times as the Greeks did in Egypt. However mistaken the object in the latter case, the motive, as well as the praise, is the same in both. It was to perpetuate the ancient system under which they had flourished. On the above occasion, Amasis presented the Delphians with 1000 talents of *alum*⁴.

Herodotus remarks that the courtezans of Naucratis were generally beautiful. Amongst them was *Rhodopis*, whose beauty was universally celebrated; and to whom the Greeks, erroneously, attributed the building of one of the pyramids of

Sais, and about four from the western bank of the Canopic river. Ramsis is the nearest village to the ruins. (Niebuhr, vol. i. p. 78.)

⁴ Mr. Browne informs us that "*Sheb* is marked by the production of a great quantity of *native alum*, as the *name* imports. The surface, near which the alum is found, abounds with a reddish stone: and in many places is seen argillaceous earth," p. 186. This place is situated in the Desert of Selimé, six days to the S of the Great Oasis, three short of Selimé: (lat. 23° 35'); and consequently within the boundary of ancient Egypt.

Water is found there, by digging to the depth of a few feet in the sand.

Memphis. Our Author, by way of refuting this assertion, says, that although her beauty procured her considerable wealth, it was by no means equal to the construction of such a pyramid : and he adds, that “ whoever pleases may now ascertain the sum of her riches ; for that, wishing to perpetuate her name in Greece, she *contrived* what had never before been *imagined*, as an offering for the Delphic temple : she ordered a *tenth* part of her property to be expended in making a number of *iron spits*, each large enough to roast *an ox* ; they were sent to Delphi, where they are now to be seen, behind the altar presented by the Chians.” Euterpe, 135.

It is worthy of remark, that in this short history of Rhodopis, our Author has introduced several celebrated personages, with some curious particulars relating to them. *Rhodopis*, who was of Thracian origin, was fellow-servant to *Esop* : and had her liberty purchased by *Charaxus*, the brother of *Sappho* : and, finally, on his return to Samos, his sister treated him (we must suppose on occasion of this transaction) with great severity, in a copy of verses. The resort of so many beautiful females to Naucratis, may perhaps be admitted in proof of the general opulence of the place, and of the people who resorted to it. We now return to the subject of the Canopic river.

Doubtless the Canopic branch may at least be regarded as *one* of the deepest, if not *the* deepest, in ancient times ; for the city of Naucratis stood at more than 30 G. miles, in a direct line from the sea, or perhaps about as far as London from the

Nore. Its course appears to have been originally in the line between Memphis and Canopus ; passing at no great distance from the foot of the hills or eminences that bound the flat country of Egypt towards the west ; for the canal of *Baheira*, which passes in that track, appears to occupy part of an ancient bed of the Nile. (See above, page 123.) By degrees it has verged eastward ; has completely deserted that part of its bed which led into the sea at Canopus, and occupies the *Bolbitine* channel, which was originally an artificial one. By this change the Delta has been abridged, as has been observed before, about 18 British miles of the western part of its base, and which is become as barren a desert as the adjoining one of Libya ⁵.

II. The BOLBITINE mouth. This, from its connection with the former, has already been amply discussed. The ancient authors are perfectly agreed respecting the position and nature of both. They are about 16 miles distant from each other. This is at present named the Rosetta branch, from a city of that name (or rather *Raschid*) near its junction with the sea. It may be remarked, that the bar has no more than six feet depth of water on it at present ; and as there is scarcely any tide in this part of the Mediterranean, either the ancient Canopic branch

⁵ This seems to be the natural progress of things in the neighbourhood of a sandy desert. The southern and principal branch of the *Oxus*, which ran into the SE part of the Caspian, has deserted its bed ; and according to Abulgazi Khan, the tract it ran through, from the condition of fertile and well planted field, is become a sandy desert !

must have carried a greater body of water, or ships must have visited it only during the season that the bar, or *bogas*, was swept away by the floods, and before it again accumulated.

III. The SEBENNITIC mouth. There appear, as we have seen, some doubts respecting the position of this *embouchure* : nor is it a matter of surprise, that there should have been some confusion amongst the descriptions of the different openings of this branch, as it separated into so many channels, previous to its falling into the sea. We find no such confusion respecting the Canopic, the Pelusiatic, or the Bolbitine : whence it may be concluded, that the *principal* channel of the Sebennitic, had varied its course in different ages, in the part towards the sea ; as well as in the number of its openings. Strabo, as well as Herodotus, regards *that* as the Sebennitic mouth, which lies next to the Bolbitine, eastward ; and the latter says, that it runs to the point of the Delta ; but then he also says, Euterpe, 155, that *Butos*, which is known to have been at no great distance from the Canopic river, stood at the side of the Sebennitic. Ptolemy says the same : so that here is a proof that the name was applied to different branches ; for Butos is so far from being opposite the point of the Delta, that it is rather three-fourths of the distance across, from Pelusium towards Canopus. A branch of, or a canal drawn from, the Sebennitic river, appears to have passed by Butos, into the lake of the same name. It would therefore be wasting time to go into any farther inquiries concerning the application of the term Sebennitic, as far as respects

the opening to the sea, more especially as Herodotus had not a clear idea of the subject, when he spoke of the same river, as passing in one continued line to the point of the Delta, and also as passing by Butos. In effect, whatsoever he has said concerning the bulk and course of this branch, appears to apply to the *upper* part of it; or, at least, not to the part *near* the sea: and it is well known, that it divides itself into a number of channels about the parallel of *Busiris*, (or Abusir); some running to the NW, others to the ENE. Of these, the one that passes to the point of the Delta, at Brulos, is the one apparently intended for the Sebennitic by our Author, and probably by Strabo and Pliny also; and may have been the principal channel of this branch in early times: Strabo, however, allows the *Phatmetic* the pre-eminence. The Sebennitic mouth is about 30 G. miles to the E of the Bolbitine.

IV. The PHATMETIC, which answers to the modern Damietta mouth, succeeds the former, at the distance of about 32 G. miles; and is a continuation of the ancient Sebennitic branch of Herodotus. At present it is also the *principal channel* of the Nile: and whatsoever variations there may have been, in the state of the different *embouchures* of this branch, in different ages, it appears from the state of the alluvions, that *this*, and the *Canopic*, have kept their general line of course the longest. The quantity of firm land formed by these, in the parts towards the sea, whilst so great a space remains in the form of lakes, in other parts, furnishes much internal evidence, concerning this question; and

indeed, the general course of the Nile being to the northward, it might have been expected to produce a greater effect in the direction of the Sebennitic and Canopic branches, than in any other.

With respect to the depth of the Phatmetic opening, it has been shewn from the arrangement concerning the fleet of Antigonous, that it was then a deep river.

It is worthy of remark that the modern Egyptians denote the tracts on different sides of this branch, and within the ancient Delta, the *eastern* and *western* divisions : but whether this distinction obtained during the existence of the Pelusiatic branch, and meant to express the different portions of the Delta ; or whether it was adopted in more modern times, and had a reference to the Damietta branch, as the *proper* Nile, we know not ⁶.

V. and VI. The MENDESIAN and TANITIC, (or SAITIC) branches. These are situated at the eastern side of the Delta ; the first at 21, the other at 38

⁶ The body of the *present* Delta is named *Gharbia*, or the western quarter ; and the opposite tract, which formed the eastern part of the *ancient* Delta, *Sharkia* and *Shurruckia*, or the eastern quarter. *Keliube* answers to the province of Helio-polis, to the eastward, and *Giza* to that of *Latopolis*, to the westward ; of the upper part of the Delta. It would appear, that, as the Pelusiatic branch has moved downwards, the province of Keliube has advanced with it, and that of Shurruckia has retreated : so as to keep their places, respectively, the one *without*, the other *within*, the branch that formed the Delta.

Baheira commences *below* Giza ; and appears to have been named from the lake Mareotis and its canals ; *Bahr* being the term amongst the Arabs for lakes or waters.

G. miles beyond the Phatmetic, or that of Damietta. Towards the sea these are merely openings from the great lake of Menzala, or Tanis ; but the Mendesian branch, supposed to answer to the modern canal of Mansura, is represented by travellers, as a pretty considerable river, although it has no great length of course before it enters the just mentioned lake. This is also the river that presents itself in so critical a position, in the war of Louis IX. in Egypt. (See Savary's Travels.)

Very little is known concerning the modern state of the lake Menzala, which is generally named in the country, *Baheira*, a name given, as we have just seen, to lakes, or waters. During the floods of the Nile, the lake Menzala is fresh ; at other times, either salt, or brackish. It extends, either in a continued surface, or in a congeries of lakes, joined together by narrow straits, about 60 English miles, between Damietta and Pelusium ; and contains islands which have in them the ruins of towns and cities. Strabo speaks of these lakes (page 802) ; and it is probable that they have undergone little alteration since his time ; as the principal course of the waters has been more to the west, and the deposition here, in consequence, lessened.

The modern name of the Mendesian mouth, is *Dibé*, or *Pescheira* ; and that of the Tanitic, *Eummè-fareggè*.

VIIth. and last, the PELUSIAC⁷. In point of situ-

⁷ It was also called the River of *Bubastis*, from whence the importance of that place may be inferred.

ation, it is about 23 G. miles to the SE of the Tantic: and in bulk, although it was a principal branch, in ancient times, yet it may be supposed that it never equalled the Phatmetic and Canopic branches.

Concerning the present Pelusiatic river, we have already spoken, under the name of Terraet Mues^a; and which is no more than a periodical stream, separating from that of Damietta, at 16 or 17 G. miles below the present head of the Delta. But the ancient Pelusiatic river, in the time of Herodotus, (as we have shewn), separated from the others, about the parallel of Heliopolis, and at the town of Cercasora; from whence we trace its course to the north-east, towards Bubastis; in which neighbourhood the canal of Necho to the Red sea commenced. It is certain that there are no positive notices respecting the distance at which Cercasora stood, from Heliopolis; but from the manner in which Strabo speaks of the relative positions of those places, and of the Observatory of Eudoxus, one cannot suppose the Nile to have passed, as at present, near four English miles and half from Heliopolis. The main body of the river, therefore, must have verged more to the west, in that part, since the times of Herodotus and Strabo, as it is apparent the Sebennitic branch has. And this variation in its course may have been the immediate cause of the defalcation of the waters of the Pelusiatic river.

One may naturally suppose, that, at a time when

^a See above, page 69.

the separation of the arms of the Nile was yet higher up, than in the time of Herodotus, the Pelusiatic branch passed successively in the line of the canals of Trajan and Omar; which canals appear to have been made through the hollow ground left by the river at different times. This appears no less by the direction of those canals, than by the small lakes that seem to mark the ancient beds of the river, in different places⁹. But, to descend to later times—the Pelusiatic branch, when it separated at Cercasora, must have passed near the ancient city and temple of ONIAS, situated to the north-eastward of Heliopolis, at the distance of about eight G. miles. As this is very much to the point of our subject, and as M. D'Anville seems to have mistaken the site of that famous establishment of the Jews, the reader may not be displeased at our giving the detail of its position.

It is well known that Onias, the High Priest of the Jews, founded a temple, and a small city in Egypt, by permission of PTOLEMY PHILOMETOR, in the Nomos or province of Heliopolis. This city, as well as the district immediately around it, took the name of Onias, or *Onion*, and as such appears in the

⁹ In Plate XVIII. of M. Norden's Views in Egypt, where the ceremony of the opening of the canal of Cairo is described, the appearance of the ground is that of an ancient bed of the Nile, of which the canal makes a part.

It appears that Mr. Browne considered all the soil as alluvial, below Cairo. He says, page 46, "From the north (of Cairo) a plain extends to the Delta, which it resembles in soil and productions."

geography of Ptolemy. The ancient notices concerning its position, are not so precise as could be wished, that of Ptolemy excepted. Josephus, from whom the whole history of the place is collected, says¹, that it stood at 180 stadia from Memphis: but as this points to a situation nearest to Heliopolis, it is, no doubt, a mistake. However, some have, from this circumstance, referred it to Heliopolis itself; which arrangement is not authorized, either by the history, or the geography.

Ptolemy's report allows a distance of 17 G. miles between Babylon and *Onii Metropolis*, which latter stands at, or very near to, the river of Pelusium; and in a north-easterly direction from Babylon (that is, Fostat, or ancient Cairo). That this was the general position of Onion, is evident, from its lying in the road between Pelusium and Memphis; and not *within* the Delta, although the plain denominated from the Jews, was situated within that tract; as appears from the same authority².

There occurs in the Antonine Itinerary (p. 169), a Jewish town or village, at 30 MP. from Heliopolis, towards Pelusium; but this is not only much too far removed from Heliopolis, but, by the construction in page 59, must be situated on a different road from Pelusium. M. D'Anville, however, regards this as the position in question; but he had not the advantage of M. Niebuhr's observations, to set him right;

¹ History of the Jewish War, lib. vii. 10, 3.

² For both of these notices, see Jewish War, lib. i. 9, 3; and Antiquities, lib. xiv. 8, 1.

for this gentleman's inquiries lead to a perfect confirmation of the above report of Ptolemy; without discrediting the authority of the Itinerary; since there are the remains of other Jewish establishments, besides the one formed by Onias.

M. Niebuhr, then, was informed that the people in and about Cairo, knew from tradition, the situations of several towns that had heretofore been inhabited by the Jews; and of which some remains were still visible. The Jews in question, might either be a part of those who fled into Egypt, on occasion of the murder of Gedaliah; or who might be attracted thither by the temple and establishment of Onias. N. Niebuhr gives the names of seven such sites, at the distance of *two* to *eight* leagues from Cairo, to the north-east; and, apparently, all of them within the Nomos of Heliopolis; or, as it is named at present, (no doubt corrupted from the ancient name) *Keliubie*.

It appears probable that the *original* establishment of the Jews in Egypt, was in this province of Heliopolis; as the family of Jacob was no doubt placed at no great distance from the then capital, whether Heliopolis or Memphis; and indeed the history of Moses shews, that the place of *his* nativity could not be far from the capital, by the circumstance of the king's daughter finding him in the course of her walks. There were also reports that Moses himself was of Heliopolis³. If the original settle-

³ Heliopolis, supposed to be the *On* of the Scriptures, was celebrated as a school of science from very early times. Hero-

ment of the Jews was in this quarter, it appears natural enough that Onias should select a place for his temple within the same tract⁴.

Amongst the remains of Jewish establishments, one in particular was pointed out to M. Niebuhr, under the name of *Tel el Jehud*, or *Kabar Jehud Bemderuthe*, at eight G. miles to the NNE or NE b. N of Heliopolis; and which he himself saw, at the distance of four miles to the northward, on his way from Cairo to Suez⁵. It was reported to have been a considerable city, and it forms at present a great heap of ruins, conspicuous from afar. Jo-

dotus says, (Euterpe, 3.) that the inhabitants of this place "are deemed the most ingenious of all the Egyptians." We learn, moreover, from Strabo (pages 805, 806,) that it was afterwards the school of Plato and Eudoxus. Moses is said to have been "skilled in all the learning of the Egyptians." If he obtained it at Heliopolis, it must have very long indeed preserved its consequence; for Moses lived about eleven centuries before Herodotus: but it might nevertheless have been so.

The Israelites, when they *began* their march out of Egypt, must have been on the *east* side of the Nile; for they certainly did not cross it, in their way to the Red sea.

⁴ There had been a heathen temple there originally. Probably the site might have been chosen for the sake of the *mound* of earth already raised there. Such mounds appear at Heliopolis, and other places: and such a one is described by Herodotus, at Bubastis, &c. See above, page 140.

Was it not, that the context of the geography renders it quite improbable, one might have suspected that Bubastis itself was the place intended by Josephus, when he places it in the district of *Bubastis*, or country of *Diana*; and also on the site of an ancient heathen temple. But the Geography of Ptolemy has in it, *Bubastis*, as well as *Onias*.

⁵ See M. Niebuhr's *Voyage*, Vol. i. p. 81, 82, and 172.

sephus relates that some parts of the temple were 60 cubits in height. It was also fortified.

It is certain that the situation of this heap of ruins answers to the above-mentioned place in Ptolemy; for it is about $16\frac{1}{2}$ G. miles to the NE b. N. of Babylon, whilst Ptolemy's is 17, about NE $\frac{1}{2}$ E⁶. He also leads the Pelusiatic or Bubastic arm of the Nile, by the west side of it; and such is really the course that it may be expected to have taken, from Cercasora to Bubastis: and it must be allowed, that this circumstance furnishes a presumptive proof, in favour of the assertion of Herodotus, that "the Pelusiatic arm of the Nile directs itself towards the east from Cercasora." It may be remarked, that Ptolemy derives the branch that passed before *Athribis* from that of Bubastis, a little below the apex of the Delta: which appears probable, and furnishes another presumptive proof that the *great body* of the Nile has gone to the west, in that quarter.

The bulk of the Pelusiatic branch of the Nile may be inferred, as well from the security it afforded to the eastern frontier, as from its being able to furnish a copious supply of water for the canal of Suez. It may be conceived that whilst the separation of the arms of the Nile was high up towards the entrance of, or within, the valley, the Pelusiatic river ran in such a direction, as to have a proper descent along the general slope of the alluvion: but that when the

⁶ It is proper to remark, that M. Niebuhr himself conceived that the ruins were those of the city and temple of Onias. See Vol. i. p. 81.

Nile continued its course in a collective stream to a much lower point, that of the Pelusiatic branch became almost at right angles with the general course of the Nile; so that it was deprived of the declivity necessary to preserve its course to the sea. And hence, probably, we are to account for the failure of this once copious stream.

When we regard the general arrangement of the lands of the Delta, and the adjoining tract; in the lower part of which, towards the sea, is found a lake, and a portion of land, alternately; with a large arm of the Nile passing through each of those portions of land; it appears almost certain that these narrow tracts of land have been extended so far beyond the great body of the Delta, by the long continued courses of the rivers through them; as the lakes are occasioned by the absence of the rivers⁷.

The lakes may be considered as portions of the sea, not yet filled up; but which are daily filling, though in different degrees, according to situation and circumstances. For it may be perceived, that the operation of filling up the lakes, and raising the soil of the lands, has gone on the most rapidly, in the western part of the Delta, and its adjacencies; the lake of Mareotis, which formed an expanse of thirty miles in the time of Strabo, being now filled up, nearly to the level of the country; and the lakes

⁷ The mouths of the Rhone seem to furnish the same kind of examples; together with appearances of the change of place of the head of its Delta, downwards. Probably, an examination on the spot would substantiate the fact beyond dispute.

by Canopus much in the same state: whilst that of *Butos* (or *Brulos*), near the middle of the maritime part of the Delta, remains; although it be much smaller than that of *Tanis* (or *Menzala*), which is the furthest removed from the general line of course of the Nile.

It may therefore be inferred, by the hollow and imperfect state of the Delta on the east, that much less of the matter of alluvion has been carried that way, than towards the north and north-west: and it seems agreeable to reason, that the issue of the waters should be in the direction of the general course of the Nile, which is northerly: and that the greatest deposition should follow the greatest discharge of water. In the eastern quarter, therefore, the new land is found in the most imperfect state: large lakes and morasses lying midway down the Delta: and a vast lake (that of *Baheira*, or *Menzala*) near the sea, inclosed on that side by a bank, formed apparently of the sediment carried to the eastward, by the prevailing current, along the coast; and deposited along the edge of its track, in the form of a *narrow dam*; and which has been raised higher than the mere act of deposition could have placed it, by the surge of the sea. The progress of filling up has been very slow; for Strabo speaks of it, page 802, much in the same way as modern travellers do. It is possible, however, that breaches of the sea may have protracted this operation, as they have enlarged the *Zuyder Zee* in modern times.

Besides the instance of the Mareotis, history furnishes several examples of the filling up of lakes, by

depositions. The Tigris and Euphrates in the time of Nearchus formed an extensive lake near the sea. That lake is no more to be found. The upper part of the *Paludes*, into which the *Pallacopa* led, below Babylon, now forms a plain, although it retains its former name of *Bahr Nedjuff*; that is, the sea, or lake of *Nedjuff*. It has also been remarked, that the site of the lake Mareotis still bears the name of *Baheira*, or the lake.

Travellers have remarked chains of *sand hills* along various parts of the coast of the Delta; and more particularly in the parts opposite to the lakes of Brulos and Menzala. It may be conceived that these have remained for ages, in the nature of mounds, to retain the waters of the lakes; the progress of extending the alluvions into the sea, in these places, having been so slow as to leave the margin of the coast so long exposed to the operation of the surge raised by strong northerly winds, as to produce the effect above described. This opinion, if founded, overthrows the idea of a rapid extension of the Delta; at least, in the parts removed from the mouths of the river. Such chains of sand hills are also found in other alluvial countries, and sometimes many leagues inland; though always, we believe, extended in a direction parallel to the sea coast. In these cases, it may be supposed that the lakes to which they served as mounds have been filled up; and the alluvions (either of the sea or of rivers) extended beyond the sand hills, which, in consequence, would be left inland.

Considering the maritime lakes of Egypt as

having been originally parts of the sea, one ought not to treat lightly the tradition preserved by Homer, that the Island of *Pharos*, in early times, lay at the distance of a day's sail from the mouth of the Nile^a. The lake *Mareotis* is described by Strabo and Pliny to have an extent of about 30 Roman miles; and by Ptolemy, who lived on its banks, of 34 G. miles inland from Alexandria: and 35 was the space sailed through in a day by the ancient ships! Who can help supposing, when he considers the disposition of the land and water, in the Delta of the Nile, and the process of forming new alluvions, however slow, that such was once the state of things?

^a It has been shewn that Canopus, as well as Pharos, was anciently an island.

SECTION XX.

CONCERNING THE OASES OF EGYPT, AND LIBYA, DESCRIBED BY THE ANCIENTS : AND FIRST OF THE EGYPTIAN OASES.

The Term OASIS, applied by the Ancients, generally, to those Islands of the Desert alone that were subject to Egypt—well known to the Arabian Geographers.—General Description of the Oases; with their supposed Origin—their Fertility, Beauty, and Celebrity—owe much, however, to the Contrast, arising from their singular Situation—instrumental to Superstition in ancient Times—used by the Caravans as places of Refreshment—like some Islands of the Sea, they have been Places of Banishment for Offenders—The Tract which contains the Egyptian Oases, denominated Al Wahat; from Wah, the Arabic Term for such Islands—Position and Extent of Al Wahat—Of the Oases, two belong to Egypt; one to Libya—general Ideas of the Arabian Geographers, and of the Ancients, concerning them—FIRST, or greater Oasis, determined—its Position opposite to Abydos, and not far from Thebes—named Al Wah by the Moderns—SECOND, or lesser Oasis, nearest to the Lake Moeris: and is the Bahnasa of the Desert—less known than the other, to the Moderns—Investigation of the principal Points in the Geography of Libya; an Operation necessary to the final Adjustment of the Position of the THIRD Oasis; or that of Ammon—The Positions of Fezzan, Augela, and Seewa; with the Route between Fezzan and

Egypt, determined—Proofs that the Santariah of the Arabian Geographers is the Seewa of the present time.

MUCH has been said, as well by the ancients as the moderns, concerning the number and position of the OASES, or Islands of the Desert, in and about Egypt and Libya: but, as might be expected, in a matter where so many have written, and so few have understood the subject, simple as it really is in itself, there has been much difference of opinion, and much error. It may be conceived that this has chiefly arisen from their having confounded certain of the *Libyan* Oases with those of *Egypt*. For, it is proper to remark, that, although islands are scattered over the whole Libyan Desert, yet that the ancient geographers in general (Strabo, however, is an exception) applied the term Oases to those *alone* which formed a part of the Egyptian dominion along the west of the Nile, and between it and Libya; and this rule appears to have been generally followed by the Arabian geographers. Even the latter syllable of Seewa, it appears, does not express the term *Wah* or *Oasis*.¹

Every one knows that the Oases are *insulated* fertile *spots*, like islands, in the midst of an expanse of desert, and surrounded by *higher* lands. Abulfeda calls them, in the most unqualified terms, *Islands of the Desert*: and applies the term also to large tracts, such as Fezzan, Augela, Wadan, &c. for although the general character of the Oases is that of very confined tracts, yet some of them are

¹ There seems to be no question, that the Greek term OASIS is derived from the Arabic WAH.

very large ; and Fezzan, in particular, is equal to a small kingdom ; notwithstanding that, by its being completely enveloped in deserts, it is in every respect to be deemed an *Oasis*.

The ancients also appear to have had a most perfect idea of the face of North Africa, by their comparing it to a leopard's skin ². Probably it is spotted, more or less, with Oases, over the whole extent of the desert : for even in the *Sahara*, which has a breadth of more than 50 journies, there appear to be certain spots interspersed, which peep above the surface of the sandy waste, like islands rising above the face of the deep.

The description of the Oases is very brief. They are aptly compared to *islands* in a *sea of sand* ³ ; but they surpass those of the ocean, in that they are almost universally fruitful, whilst the others are more commonly naked and barren : the one, probably, owing their very growth and existence to that principle which fertilizes them ; namely, fountains of water springing up in the desert ; whilst the others are either the *ruins* of ancient lands ; the production of volcanoes, or accumulations of marine substances.

The Oases, with very few exceptions, are plentifully supplied with fountains of pure water : and

² Strabo says so, p. 130, quoting *Cneius Piso*.

³ Thomson thus poetically styles them,

————— the tufted isles,
That verdant rise amid the Libyan wild ———
Summer, ver. 912.

seem to possess a greater proportion of that useful element than falls to the share of small tracts of land in other situations. Is it then too much to suppose, that the foundations of these *islands* were first laid by vegetation, occasioned by springs ; the decay of which vegetation produced soil, until it gradually increased to the state in which we behold them ? They appear universally to be surrounded by higher lands, which may well account for the springs. In particular, Fezzan ⁴ is nearly encircled with mountains : and the descent from the western barrier of Egypt, into the middle level of the Greater Oasis, is strikingly marked by Mr. Browne, page 184.

It is not improbable, however, that the Oases might derive a part of their reputed superiority in fountains, verdure, and fruits, from the striking contrast between them and the surrounding waste ; as they can only be visited by persons who have been at least four or five days, perhaps twice that number, in the midst of burning sands, and who are consequently prepared to set a high value on the comforts of *shade* and *cooling streams*, which abound in those secluded spots ; and the want of which had constituted the chief evil of the journey. To these solid advantages is to be added, the effect produced on the mind by the romantic nature of the situation ; for we are apt to regard a beautiful scene in an *insular* situation, as more interesting than one of the same kind, in an ordinary, and an accessible situation. Probably the island of ST. HELENA, how-

⁴ African Association for 1790, chap. IV.

ever beautiful its scenes, or its women, may derive a part of its praise from the length of time to which its visitors are confined to the watery waste in their way to it.

It can hardly be doubted, that the temple of Jupiter Ammon was placed in the *most retired* of the Oases, with a view to derive advantages from the effects of various impressions made on the minds of its visitors by its singular situation. It is remarked by Arrian, that Alexander himself was surprised at the nature of the place. The perilous nature of the journey to it (that of Alexander, and the army of Cambyzes are examples) would subdue the minds of ordinary persons, and fit them for the operations of priestcraft. The island itself, situated in the midst of a boundless tract of *moving sand*, would appear to such minds a kind of continued miracle: and the temple may possibly have had a history belonging to it, something like that of *Loretto*!

Mr. Browne's description of the Greater Oasis, however, lessens somewhat of the importance attached to it, from the reports of former travellers, Poncet in particular; for Mr. Browne's praises are bestowed chiefly on the Oasis of Seewa (and, no doubt, very deservedly); and of the other he says little more than that there is good water, and plenty of dates. It appears to consist of a number of detached fertile spots or islands, extending in a line parallel to the course of the Nile, and of the mountains that border the valley of Upper Egypt; separated from each other by deserts of *two to fourteen* hours' travelling; so that the whole extent of the chain may

be 100 English miles ; but by far the greatest part of it desert.

M. Poncet, who visited it in his way to Abyssinia, in 1698, agrees in his description with the Arabian geographers, and also with those of the ancients. M. Poncet says, " Here are to be seen a great number of gardens, watered by brooks, and forests of palm-trees, that preserve a continued verdure."

Mr. Browne describes one principal town, Charjé, and several villages. The whole Oasis is subject to Egypt, and has ever been reckoned an appendage to it.

It appears that the Greater Oasis, and that of Seewa or Siwa, are made use of by the caravans, as places of refreshment, by the way. The former occurs in the road from Egypt to Abyssinia and Darfoor ; the latter, in that from Egypt to Fezzan, and Western Africa in general, and is the most in use of the two, not only as the trade to the west is more extensive than that to the south, but because the pilgrims to Mecca form a part of these caravans. The Greater Oasis, indeed, occurs too near to Egypt to be of the same advantage as that of Seewa, which is 15 or more journies from Egypt, whilst the other is only five. Perhaps the Oasis of Seewa may not be unaptly compared, in respect of the caravans, with the Island of St. Helena, in respect of our India fleets : as, like that, it affords water, refreshments, and a convenient place of rest. It is possible too, that it may often afford that kind of intelligence, respecting the political and commercial state of the countries, which the caravan means to visit, as to

enable the merchants to arrange their plans with more security and advantage, than if they had kept to the Desert through the whole route : for it is to be observed, that Seewa does not lie in the direct route ⁵.

The Lesser Oasis appears to be but imperfectly known to the Egyptians, as it lies quite out of the track of the caravans ; and is therefore seldom visited by any but the Arabs of the Libyan Desert. Consequently, a traveller who visits Egypt is likely to hear less of *this*, than of the others.

Mr. Browne's inquiries, however, have brought out some new lights concerning it ; but notwithstanding, the subject is far from being clear. P. Lucas was told that it had no springs, and that the inhabitants were supplied from wells only. But this circumstance does not accord with probability, since by what Mr. Browne and Horneman heard of it, it is much the same kind of place with the Greater Oasis ; which, as well as that of Seewa, seems evidently to owe its existence to springs.

It is a matter of great satisfaction that Mr. Browne has visited the two principal Oases ; so that we have descriptions that may be depended on. The Oasis of Seewa (taken for *Ammon*) appears to be by far the finest spot : but what is singular, this favoured

⁵ Seewa lies about two-thirds of the way from the plentiful country of Fezzan, towards Egypt. That the caravans go out of their way, to Seewa, is plain, from what Mr. Browne tells us ; for El Sogheir lies two journies to the NE of Seewa, and the Plain of Gegabib three to the NW of it ; and the general line of the road from Egypt to Augela is west.

place is inhabited by a most unquiet race of beings ; perhaps rendered so by the nature of their government, which is placed in the hands of certain turbulent chiefs, whose elections and intrigues frequently produce civil broils and bloodshed ⁶. In the days of Herodotus, as well as of Alexander, they were governed by a king: and we hear of no troubles or dissensions at that time. The religion of Ammon might also be milder, and more tolerant, than that of Mahomed.

The Greater Oasis, and that of Ammon, were used as places of banishment by some of the monarchs of the lower empire. Athanasius, Bishop of Alexandria, the champion of the doctrine of the Trinity, was banished in the fourth century to the Oasis of Ammon, and died there. Nestorius, Bishop of Constantinople, was also banished in the succeeding century, to the Greater Oasis; which was invaded and destroyed by the *Blemmyes*, an Ethiopian tribe, during his residence there. Others of less note suffered a similar fate, in both these Oases. The practice of banishing people thither for ordinary offences, had probably been in use amongst the ancient Egyptians. The islands of the Persian gulf, as we have seen, were places of banishment under the Persian monarchs: and it is probable that people would find it even less difficult to escape from the islands of the sea, than from those of the Desert.

⁶ See Proceedings Afr. Assoc. for 1790, Chap. X.; and Mr. Browne's Travels, page 24.

In order to collect any precise ideas respecting the positions of the Oases, as they are described by the ancients, one must first lay down as a groundwork, the descriptions given by the Arabian geographers; together with the information collected by intelligent modern travellers; as from these, collectively, we are likely to obtain a greater mass of information than is to be *found* in the writings of the ancients, how much soever they may have *known* concerning the subject.

It appears that the Arabian geographers⁷ express by the collective term AL WAHAT, the desert which contains the *Wahs* or *Oases* dependent on Egypt; although no such *collective* idea appears amongst the ancients. This tract of Al Wahat claims our first attention; not only as it included the Oases belonging to Egypt, but because the discrimination of it leads to some important geographical conclusions⁸.

Edrisi says, p. 18 and 19, that Al Wahat lies *near* or *adjacent* to Assouan (*i. e.* Syene: it may be supposed that the *district* is meant), and extends downwards along the border of Egypt. In p. 43, it is said also to border on the canal of *Menhi*; that is, of *Joseph*; which opens into the lake Faiume, or Moëris. Again, p. 97, it touches the border of Nubia, near the southern extremity of Egypt; and,

⁷ Edrisi, Abulfeda, Jacutus, and Ibn al Wardi.

⁸ The reader is referred, for geographical explanation relative to this Section, to the Map, No. IX, at page 183.

p. 18 and 19, also touches on the countries of *Kucu* and *Kavar*⁹. Thus far Edrisi.

Abulfeda says, that Al Wahat lies to the SE of *Santariah* (that is, *Seewa*): and that the district of Augela is situated between *Magreb* (Muggreb, or Western Africa) and Al Wahat¹. Again, the common boundary of Egypt and Magreb, is a line drawn from a certain mountain on the coast, (implied to be the lesser *Catabathmus*) to the *tract* of Al Wahat, and thence *along it*, to the boundary of Nubia². Al Wahat is there said to be composed of a number of tracts like islands, surrounded by the Desert: and that there is a space of three journies between *it* and *Säide* (Upper Egypt). And quoting *Jacutus*, he says, that it is composed of *three districts* on the west of the Saide, and beyond the mountains; extending in a direction parallel to the course of the Nile.

Jacutus (quoted by Hartmann)³ says, that "it extends from a point opposite to the lake of Faiume, to Assuan."

Ibn al Wardi, Hartmann, 491, only says of the situation, that "there are *places* (or *tracts*) named *Alouhat*, situated along the mountains, which are *between* Egypt and the Desert." He is singular in arranging Al Wahat as a division of Africa, and not of *Egypt*. He makes *that* division, which he calls

⁹ These countries will be found in the new Map of North Africa, published by the African Association, in 1798.

¹ Tab. III. Africa, marginal notes.

² Tab. II. Egypt, marginal notes.

³ Hartmann's Edrisi, p. 494.

the *third*, to consist of Al Wahat, Barca, Alexandria, and the Desert on the west: and names it *Sus al Adna*, or *the nearest*; meaning, it may be presumed, in respect of Egypt.

Thus we have before us the ideas of the Arabian geographers, concerning the position and extent of the tract called AL WAHAT; which, however, we must conceive to be included within *imaginary* boundaries, except on the side towards the Nile. For, it will be found, that the Oases occupy only a *part* of it; and we can conceive no distinction of boundary, in a trackless desert. Taking it, however, according to the descriptions, one may suppose it to have an extent of 350 G. miles from north to south; and 150 from east to west: and it appears certain, that it contained no other Oases than those properly belonging to Egypt; that is, the *greater* and *lesser*.

We come next to the consideration of the *number* and *particular* situations of the Oases or Wahs. And here the Arabian geographers fail us; for *not one* of them is accurate and decided, with respect to *all*; and it is not without great difficulty, and by help of modern travellers, that the truth is unravelled. And, in effect, it will appear that the Oriental geographers, taken separately, either *knew* less, or have *expressed* less, concerning the general subject, than some of the ancient geographers. However, it will be very satisfactorily made out (we trust) that the most consistent descriptions, ancient and modern, agree in fixing THREE Oases; TWO of which properly belong to Egypt, and the THIRD to

Libya. We solicit a patient hearing from the reader, as he will have to attend to much dry, and intricate discussion.

The positions of the Oases given by Jacutus (as quoted by Hartmann, p. 494.) may easily be shewn to be so erroneous, that it would be taking up the time of the reader to no purpose, were we to state them in detail. In effect, he describes the three Oases to extend in three lines, which are parallel to the Nile, and to each other; and separated by ridges of mountains. Moreover, he extends them in length, from the lake Moeris to the parallel of Assouan. Nothing can be more unlike the truth.

Ibn al Wardi (Hartmann, 491.) does not specify the number, or particular situation. He appears to speak only of Al Wahat, or the Egyptian Oases, collectively.

It would prove both tedious and useless, to quote indiscriminately the information respecting the Oases, contained in the ordinary books of European travellers. We shall therefore content ourselves with having recourse to M. Maillet, and a very few others, whose information seems to be of a superior kind to the rest. M. Maillet says, p. 303, 304, that Al Wah is nearest to Manfoulet, at the left of the Nile: and that the caravans of Nubia pass to it, from Egypt, after 13 journies. These notices apply to the *Greater* Oasis; which indeed appears to have been the only one known to M. Maillet. M. Poncet, who passed through it, in his way to Abyssinia, in 1698, made five journies to it, from the bank of the Nile, near Manfoulet, which agrees with M. Mail-

let's report ; as his 13 journies are reckoned from Cairo. Dr. Pococke speaks of *two* Oases only ; but then he must be understood to speak of *Egypt* merely : and the omission of the *third* cannot therefore be charged as a deficiency. His remarks are drawn from the ancients, save in the single particular, respecting the distance between the two Oases ; which he reports to be 100 miles ⁴. Lucas appears to have heard of one only, and that the Lesser Oasis.

We are concerned to state, that M. Savary, whose opinions and writings in general are entitled to much respect, has given no authorities of his own collecting, for the number, or the position of the Oases ; and that, moreover, he has, in our idea, failed in the mode of digesting, if not in the construction, of the materials which he has drawn from the ancients, and from the Arabian geographers.

Mr. Browne having visited both the Greater Oasis, and that of Ammon ; and having also heard some particulars respecting the lesser one, during his residence in the former of these ; much light will be thrown on the subject, by the aid of his remarks : and there is little doubt but that the three Oases, spoken of by the ancients, may be very satisfactorily placed in modern geography.

In the next place, we shall adduce the principal authorities from the ancient authors.

Strabo (p. 813.) speaks distinctly of *three* Oases.

⁴ As Ptolemy allows 115 miles between them, we must infer that Pococke spoke from some modern authority.

The **FIRST** situated opposite to *Abydos*, at the distance of seven journies; abounding with water, vines, and other productions; and well inhabited. The **SECOND** was near the lake *Moeris*; and the **THIRD**, near to, or at, the Oracle of *Ammon*. He had previously said, in p. 791, that there were three Oases subject to Egypt; which might very well have been the case in his time; when Ammon was included in the Egyptian province, subject to Rome. He confesses his ignorance of what lay *beyond* Ammon, and also of the Oases in Libya. P. 839. The Egyptians, says he, p. 791, call those tracts *AUASIS*, which are surrounded by the wide Desert, like islands in the sea ⁵.

Ptolemy has two Oases only, which he so names; the *Greater* and *Lesser* ⁶. The first, he places in the parallel of Abydos; and the other, not far from the lake Moeris, but to the south of its parallel. Of course, these have a pretty exact agreement with the *first* and *second* Oases of Strabo: and that of Jupiter Ammon answers to the *third*, although not by him denominated an Oasis.

Ptolemy's Greater Oasis is placed in latitude 26° 55'; The Lesser in 28° 45'. It may reasonably be supposed that these *points* or *stations*, are meant to represent some principal place, or town, in Ptolemy's Geography: perhaps the principal town of each of the Oases.

⁵ * *Ἀνασις*, instead of *Αὔασις*, is found every where in the text of Strabo (particularly in page 813); but there can be no doubt that the *ν* has been substituted for the *υ*.

⁶ Savary erroneously gives *three* Oases to Ptolemy.

Pliny speaks of *two* Oases only, bordering on Egypt. He also knew the position of Ammon, lib. v. 5 and 6, but confines the term Oasis, like most others, to those of Egypt.

Herodotus appears to have known but of *one*. In Thalia, 26, he describes the Greater Oasis, under the name *Oasis*, as *appropriate* to it; not having, we may suppose, heard of its application generally to the islands of the Desert. But he, nevertheless, describes those of *Ammon*, *Augela*, the *Garamantes*, &c.; though not under the *name* of Oasis.

Thus the ancients are generally agreed, in limiting the *Egyptian* Oases to two only; placing the third at the Oracle of Ammon in Libya: and, in this idea, the best informed modern writers appear to be agreed. We shall now bring together the principal authorities, *ancient* as well as *modern*, for the positions of them, severally; adding our own opinion to each.

I. THE GREATER OASIS: the best known of all to the Egyptians and Arabs, and generally intended by AL WAH; or THE OASIS, by way of excellence.

This is established in modern geography by the tracks of the caravans from Egypt to Abyssinia. The caravans leave the Nile in the neighbourhood of Siout, or of Manfoulet, in Upper Egypt, situated at 75 to 80 G. miles short (northward) of ancient Abydos, to which the centre of the Great Oasis is nearly opposite. M. Maillet informs us that Manfoulet is the nearest point of the Nile to Al Wah: and that the distance from the place of departure of the caravan (*i. e.* Cairo) to Al Wah, is 13 journies. We find on D'Anville's Map of Egypt, about 220

miles between Cairo and the NE part of Al Wah; equal to 17 miles per day; agreeing very well. It also appears that the same part of Al Wah is 80 miles from Manfoulet (about SW b. W); and M. Poncet's caravan employed five days between those two points; which is equal to a rate of 16 miles per day: and differs but little from M. Maillet.

Mr. Browne fixed the position of *Siout*, or *Assiut*, by celestial observations, both of latitude and longitude: and it is remarkable, that it differs but a shade from the position assumed in the Map of North Africa (1798), published in the Proceedings of the African Association. This affords much satisfaction, in respect of the remaining positions in Upper Egypt, which rested on the truth of Mr. Bruce's observation of longitude at Assuan. Mr. Browne fixed the Greater Oasis, that is, the principal town in it, *Charjé*, by an observation of latitude; and calculated its longitude by his bearings and distance from Siout. The result of both will be found in the note; where it will be seen that Charjé, in our map, stood only 4 min. of lat. more to the south, and 5 of lon. more to the east, than by Mr. Browne's calculation⁷.

The Nubian and Darfoor caravans appear to travel nearly 100 British miles⁸, through the Great

⁷ Mr. Browne places Siout, in	lat.	27° 24'	lon.	31° 24'
The Map of Africa, 1798, has	—	27 22	—	31 19
Mr. Browne places Charjé	. . .	— 26 25	—	29 40
The Map		— 26 21	—	29 45

⁸ That is, including the intermediate intervals of desert, which separate the fertile spots.

Oasis, in a direction of south, a little west; so that it reaches considerably to the south of the parallel of Thebes. But this being yet near a degree and half short of that of Assouan, Jacutus, as we have said before (page 193), is incorrect in extending the first Wah so far to the south: as is Edrisi, in saying that it lies to the west of Assouan: unless they both might intend the *tract* of *Al Wahat* merely.

It appears pretty certain that Al Wah extends very little either to the N or S beyond the space which the caravans travel through it: for they appear to go out of their way, in order to profit as much as they can, of the advantages which it offers, in point of refreshment.

It may be perceived that the *first* Oasis of Strabo, placed *opposite* to Abydos, and at seven journies from it, is evidently meant for *Al Wah*: but the distance is rather too great, it being only about 95 G. miles from Abydos to the *nearest* point of the Oasis. Ptolemy has 96, exactly.

Herodotus allows seven journies between Thebes and the Greater Oasis (the only one known to him). He says that this journey was "across the sands;" which well expresses the idea of the road to it. The approximating parts of Thebes, and of the Oasis, may be reckoned 140 G. miles, which require 20 such miles per day direct; which is above the common rate, although it be lower than that of the journies from Seewa, according to the information communicated by Mr. Browne. He was told that Al Wah was distant 12 journies only, which requires a rate of *more* than 20. He was told the same of

Cairo, which requires 22 ; and that *Derna* was only 14 journies distant. But as all of these journies are of the same length as those of Mr. Browne, from the sea coast to Seewa, in which they travelled 11 or 12 hours each day, they must be regarded as *forced marches* : for he tells us, page 17, that there being little or no water in that track, " they were obliged to use all possible diligence in the route ;" and the other tracks being much of the same kind, it may be supposed that by these journies are meant such as are undertaken by very small parties lightly equipped.

Our Author adds, that " the Oasis was said to be inhabited by *Samians*, of the *Æschryonian* tribe : " and that the country was called, in Greek, " the happy Islands." *Thalia*, 26.

It appears that no part of the Oasis approaches nearer than 75 or 80 G. miles, to the *Säide*, or Upper Egypt ; which is understood to include only the narrow valley through which the Nile runs, and which is bounded on either side by a ridge of hills or mountains. However, *Abulfeda* says, that the *Wahs* are no more than three journies, (or less than 60 miles) from the *Säide*. Either the calculation may be coarse, or the *Säide* *may* extend farther from the Nile than we suppose ; but the question is of little importance ; for, in effect, nothing appears more certain than that, by the Greater Oasis, the ancients intended the *Al Wah* of the moderns : and it is equally certain that the position assigned to each respectively, by the ancients and moderns, is one and

the same; so that not a shadow of doubt ought to remain regarding the identity of the place.

II. THE LESSER OASIS.

Since this does not lie in the track of any of the caravans, it happens that we know much less about it than the other Oases. It has appeared that Strabo and Ptolemy, amongst the ancients: Pococke and Lucas, amongst the moderns, have placed it towards the lake Kairun or Moeris: and that the descriptions of the Arabian geographers imply an *inhabited*, or at least an *habitable* tract, in that quarter. But its exact site, any more than its extent, cannot be ascertained, and we must be content with approximating certain *points* in it.

Ptolemy, who alone of the ancients, gives any *positive* information concerning its site, places it in the parallel of $28^{\circ} 45'$. He also places it 75 G. miles to the westward of *Oxyrynchus*, a city which, according to M. D'Anville⁹, stood on the site of the present *Bahnasa*, at the canal of *Joseph* (called also *Menhi*); but it happens that Ptolemy, by an utter derangement of the position of *Oxyrynchus*, and the

⁹ Respecting Egypt, M. D'Anville is our guide in such matters as have not been otherwise explained by M. Niebuhr, and other travellers, whose observations have been made since the date of M. D'Anville's writings. The apparent accuracy, and great critical knowledge displayed in the geography of Egypt, by M. D'Anville, as far as he was master of the actual geography, appear to have rendered this department of ancient geography as perfect as any one whatsoever.

lake Moeris, in respect of Alexandria, places this Oasis in the meridian of the lake, when it ought rather to be 70 miles to the west of it. That is, he places Oxyrynchus very much too far to the eastward of Alexandria: and the lake to the *west*, instead of the *north*, of Oxyrynchus. But there is still no reason to suppose that he mistook the general position of the Oasis itself.

However, the position thus assigned by Ptolemy must relate to some single *point*, which might probably be the principal town of the Oasis; a conjecture rendered still more probable, by our learning from Abulfeda, that a city named *Bahnasa* stands in the tract of *Al Wahat*, and in this quarter; and from Edrisi, that it lies on the road from Cairo, towards the quarter of Fezzan and Morocco.

This matter of Bahnasa, however, not being perfectly clear in all its circumstances, the reader must determine for himself, after we have set the particulars before him.

Abulfeda then (article Bahnasa), says, that “besides the city of Bahnasa, at the canal of Faiume, (and which he distinguishes by calling it the *Egyptian* Bahnasa), there is another of the same name in *Al Wahat*, near the frontiers of *Nigritæ* ¹.”

Edrisi, p. 106, places Bahnasa at seven journies from Cairo towards *Segelmessa*, in Western Africa. But the reader should be informed that Edrisi, in another place, allows seven days between Cairo and the *Egyptian* Bahnasa: an evident mistake, as it is

¹ Here *Nigritia* seems to be interpolated for *Libya*.

no more than about $4\frac{1}{3}$, according to his ordinary scale.

With respect to the road from Cairo to Segelmessa, we conceive there must either be some error or omission in Edrisi : for there are no more than 41 journies given between the two places, although the distance be near 100. The road would doubtless pass through the country of Fezzan, probably through its *capital* also ; and in that case too, through *Temissa*, (a considerable town in the same country of Fezzan) at seven journies to the east, or ENE of the capital². Now, we find, in the route just mentioned, *Tamest*, or *Tamaset* (for it is differently spelt in the different translations of Edrisi), at 40 stations out of the whole 41, from Cairo, which is actually the distance between Cairo and Temissa, on the map constructed for this work, at page 183, following the scale of Edrisi. And hence it may be supposed, that he might originally have given the whole route from Cairo to Segelmessa, and that the remainder of it is lost.

To this may be added, that the mountains of *Salaban*, in Edrisi, occupy the position of those of *Ziltan* on the same map ; besides, there being a general accordance in the nature of the country to a considerable extent. Perhaps, therefore, from the coincidence of so many particulars, we may well assign to Bahnasa *its* proportion of the distance on the same route ; which being 7 days at 19, equal to 133 G. miles from Cairo, will, if laid

² See Proceedings of Afr. Assoc. for 1790, chap. iv.

off to the parallel of $28^{\circ} 45'$ (that of Ptolemy's Lesser Oasis), place the Bahnasa of the *Wah* at 83 G. miles to the westward of the *Egyptian* Bahnasa; whence, of course, it falls only eight to the west of the Lesser Oasis of Ptolemy; which, as has been shewn, he places at 75 miles from Oxyrynchus, whose site is now occupied by the Egyptian Bahnasa³.

We also collect from Edrisi, p. 41, that Al Wah is nine journies⁴ from *Santrie* (or *Santariah*) a known position, (the data for which will be given in its place, and which will appear to answer to the Oasis of Seewa and of Jupiter Ammon), at about 254 G. miles to the westward of the Egyptian Bahnasa; so that the Bahnasa of the Wah, or in other words, of the Lesser Oasis, lies immediately between them. Now, as we have seen that this latter is about 83 miles from the Egyptian Bahnasa, and is precisely in the line towards Santariah, it is evident that the complement of the distance to 254, which is 171, will just answer to the nine days between Santariah and Al Wah. So that the Lesser Oasis is certainly intended by Edrisi; and it may be the particular point in it, Bahnasa, which

³ See D'Anville's *Egypt, ancient and modern*.

⁴ Edrisi says, from *Bahrein* (or the *two lakes*) to *Giofar*, two stations; and thence to *Al Wah*, three; the country dry and sterile. Again, from *Bahrein* to *Santariah*, four stations; *Bahrein* therefore lies between *Santariah* and *Al Wah*, i. e. the Lesser Oasis, which, by the distance, should be meant. There are two lakes in Ptolemy, but much too far to the south, for *Bahrein*.

minutely coincides with the distance from Cairo, in the opposite quarter.

M. Maillet, although he is silent respecting Bahnasa in the text of his book, places a *district* of this name in his map. It is described to lie to the westward of the lake Kairun (Moeris), and about the parallel of 29° : and it bears about SW by S from Alexandria, which is actually that of our Bahnasa, from the same place.

Dr. Pococke had heard that the two Oases of Egypt were 100 miles distant from each other. These were probably meant for British, and in road distance; and therefore may be taken at about 77 G. miles in direct distance; and would reach from the northernmost point of the Greater Oasis to about the parallel of 28° , or short of Bahnasa by about 45 miles. But as this points to no *particular part* of the Oasis, all that can be inferred from it is, that it extends so far to the south.

P. Lucas had heard of this place whilst in the neighbourhood of the lake Kairun. He appears not to have heard of the *Oases* of Egypt under *that name*; and therefore his testimony ought to have more weight, as being unconnected with any system. He speaks merely of an *inhabited spot* in the Desert. He says, "There is, in the Desert, at the distance of *some* journies from Faiume (the city so named) a place of inconsiderable extent, full of palm trees, which bear the *best dates* in all *Egypt*". The

⁵ The same is said by Jacutus, respecting the superior quality of the fruits of the Oases.

Arabs, who possess and cultivate this spot, draw their scanty supplies of water from wells, which they have, with much labour and industry, dug in the Desert, and water them with great care. They pay their tribute to the Pacha in dates." (Vol. ii. of the Third Voyage of Lucas, p. 206.)

A position, at *some journies'* distance from Faiume, and in the Desert to the west, can answer to no other place than the Lesser Oasis; which, by our *data*, falls at about five journies from the town of Faiume; four from the nearest part of the lake of the same name. And it may readily be conceived, that the city of Bahnasa, (or what remains of it) is situated within the tract intended by Lucas and Pococke.

It is not unworthy of remark, that the assumed position of Bahnasa (in the Wab) is removed to much the same distance to the west of the Nile as the Greater Oasis. In effect, the ridges of mountains in this part, and to which these Oases seem to owe their position, run parallel to the general course of the Nile, which is from S to N; and appear to terminate on the coast of the Mediterranean, after bending somewhat more to the west, from the Lesser Oasis. This termination answers to the Lesser *Catabathmus* of the ancients, situated opposite to the *Hermæan* Promontory, and about 40 miles to the eastward of Parætonium.

The road of the caravan from Augela to Seewa and Cairo, lies across this range of mountains, for seven days' journey, between Seewah and the Convent of *Lottron*. The line of the road passes at the

distance of 70 or 80 miles to the northward of Bahnasa; and ascertains the fact, that the Lesser Oasis does *not* extend so far to the north.

Thus we have given our authorities for the general position of the Lesser Oasis; but which are infinitely less conclusive than those for the Greater. However, concerning the question of Bahnasa, there seems little doubt. The nine journeys from Santariah (which is Seewa), the three from the Säide, and the seven from Cairo, point generally to the same place: and the whole is strengthened by the report of its being near the parallel of the lake Moeris, as well by the ancients as the moderns.

M. D'Anville has omitted the Lesser Oasis in his modern geography, although he had before him the same materials as we have made use of, Mr. Browne's excepted. Of course, we may conclude that he doubted the authorities. There can, however, be no doubt respecting the existence of an Oasis in this general situation, in proof of which we shall now adduce the information recently obtained from the observations of Mr. Browne.

This gentleman was informed by the Muggrabin, or western Arabs, whilst in *Al Wah*, that the Lesser Oasis (called by them *Al-Wah el-Gherbi*, which appears to mark poverty or inferiority, perhaps on a comparison with the other) approached, at its southern extremity, within the distance of 40 G. miles of the northern extremity of the Greater. Mr. Browne also says, that the Lesser Oasis "forms a kind of capital settlement, if I may so speak, of the Muggrabin Arabs, who extend even to Fezzan and Tripoly."

(Page 132.) He adds, that "several ruins are said to be found there:" (perhaps those of Bahnasa amongst the rest). Again, in page 170, he speaks of these Arabs passing from the Lesser Oasis to the western extremity of the lake Kairun, whose shore, on that side, is also in their possession.

This information, of course, ought to have its due weight; but although a part of the Lesser Oasis may approach southward to the neighbourhood of Al Wah, yet there is no reason why it may not extend northward to the parallel above assigned. Even the circumstance of the Arab possessors of the Oasis, passing from it to the lake Kairun, seems to shew that a part of the Oasis lies well up towards the neighbourhood of that lake. Mr. Browne describes the Greater Oasis to consist of large detached spots: or a number of islands extending in a chain, separated by intervals of desert. Probably the Lesser Oasis may be of the same nature; as the same mountains that impend over the Greater one, are known to continue northward: *i. e.* in the same direction with the Lesser Oasis. Bahnasa may be in one of the spots, and the most northerly of all; and the southernmost spot may lie within 40 miles of the northernmost of those of the Greater Oasis: and the two, collectively, may form, in effect, one long chain. And, finally, the interval of 40 miles, by being very much greater than the intervals between the other islands, may occasion the division into *Greater* and *Lesser* Oases; each consisting of a number of islands separated by narrow deserts. According to Mr.

Browne, the greatest interval between the islands of the Greater Oasis is about 28 G. miles.

No idea is given any where of the *breadth* of the islands ; but it is probably small.

It is certain that the above supposition will give a greater extent to the *Lesser* than to the *Greater* Oasis : but the titles may have been bestowed more from the quantity or quality of the produce than the mere extent, and it seems to be allowed that the lands of the lesser Oasis are far inferior to the other ⁶.

Before we proceed to fix the place of the THIRD Oasis, it will be necessary that the *positions*, in respect of which it is to be placed, should be arranged ; and as these extend in a regular chain, from Egypt to Fezzan, and have a mutual dependence on each other, it will be proper to enter into a discussion of the whole in the first instance : and although the length of the discussion may occasion some interruption to the matter immediately in hand, yet some time will be saved in the end, by going through the whole at once : since it must otherwise have been resumed, when the subject of Libya came under consideration.

There will be found, in the accompanying note, the latitudes and longitudes of the several places, on

⁶ The Author is indebted to his friend, Mr. Wilkins, for the following interpretation of the word *Gherbi*.

“ The word *Gherbi* signifies *distant, afar off, western*. It is derived from the same root as *Gherib*, a man from a distant country, a *stranger*, a *poor man*, &c. *Meghreb*, the place where the sun sets ; *the west* ; *Africa*.

which the construction of the Map, No. IX. at page 183 sup., is founded; several of which are from celestial observations, and others from the *Con. des Temps*, &c. The Map in question serves to explain, not only the relative positions of the Oases to each other, and to the neighbouring countries, but exhibits also the whole coast of Libya, and that of Syria; together with the eastern basen of the Mediterranean sea⁷.

⁷ The Map in question contains, besides the geography of the countries, a separate delineation of the positions, according to the several authorities. The reader will be pleased to observe, that although in this *Map of Positions*, the different results of the separate authorities are shewn (and which is the principal use of it), yet that in the geographical Map it was necessary to fix the positions, according to the most approved mode of combination. Consequently, some small differences will appear, in certain cases, between the two Maps.

Table of latitudes and longitudes of the leading positions in the Map.

	Lat.	Lon. East.		Lat.	Lon. East.
Aleppo . . .	⁰ 36 11	⁰ 37 9	Selimé . . .	⁰ 22 15	⁰ 30 15
Jerusalem . . .	31 46	35 20	Seewa . . .	[*] 29 12	26 18
Gaza . . .	31 30	34 32	Parætonium . . .	31 9	26 49
Suez . . .	[*] 30 2	[*] 32 28	Augela . . .	30 3	22 46
Cairo . . .	30 3	31 19	Koseir . . .	[*] 26 8	[*] 34 8
Alexandria . . .	[*] 31 12	[*] 30 8	Cyrene . . .	32 48	21 22
Bahnasa, in Egypt	28 48	30 48	Barca . . .	32 20	20 28
Siout, or Assiut	[*] 27 24	[*] 31 24	Mesurata . . .	32 10	15 3
Thebes . . .	25 32	32 26	Fezzan . . .	} 27 48	15 3
Assouan, or Syene	[*] 24 0	[*] 33 30	Mourzouk . . .		
Charjé . . .	[*] 26 25	29 40	Tripoly . . .	32 52	13 20
Sheb . . .	[*] 23 35	30 10	Tunis . . .	36 44	10 20

* These mark the celestial observations.

Mourzouk, the capital of Fezzan, is placed, according to the report of modern travellers, in a *due south* direction from Mesurata; a town situated on the coast of the Mediterranean, and within the district of Tripoly. The distance is given at $17\frac{1}{2}$ caravan journies, taken at 15 G. miles each in direct distance; or 262 for the whole. Hence Mourzouk falls in latitude $27^{\circ} 48'$: and being under the same meridian with Mesurata, its longitude will be the same, which is $15^{\circ} 3'$ east of Greenwich^a.

The bearing and distance of Fezzan (Mourzouk) from Mesurata, receives some degree of confirmation from certain notices in Edrisi. *Wadan* is situated on this road, at eight caravan journies southward from Mesurata, $9\frac{1}{2}$ short of Fezzan. Now Edrisi says, page 135, that Wadan is five journies from *Sort*, which is known to be situated at the shore of the Greater Syrtis; distant from Tripoly, according to the same authority, in page 88, 210 Arabic miles, equal to 222 geographic. The five journies being equal to 90 or 95 such miles, Wadan must of

^a This is the calculation. Mr. Beaufoy, Afr. Assoc. 1790, chap. v. says, that the caravan (which is understood to be that of Tripoly), travels only seven or eight hours per day, and at a rate of three miles in the hour. But we have ascertained in the Phil. Trans. for 1791, p. 142, that $2\frac{1}{2}$ miles is nearly the rate. It is shewn also, in the same place, that the *heavy or loaded* caravan across the Arabian Desert, travels about $7\frac{1}{2}$ hours per day; agreeing with Mr. Beaufoy's Tripoly caravan. Then about 19 British miles will be a day's journey, by the road, and 15 G. miles in direct distance. This statement of the rate of the Tripoly caravan falls short of that of the African caravans in general, which has been shewn to be upwards of 16.

necessity lie in a southerly direction from Mesurata; in order to preserve its proper distance from Sort. Again, Zuela, which is a known position, at about 60 G. miles to the east, somewhat north, from Mourzouk, is stated by Edrisi, to be eight journies from Wadan; nine from Sort: and Abulfeda adds, to the southward of the latter. From these *data* collectively, one may rest satisfied that the capital of Fezzan lies very much southerly, if not directly south, from Mesurata⁹.

The difference of longitude between Fezzan (thus arranged) and Cairo, as will appear by a reference to the foregoing table, is $16^{\circ} 16'$; giving a direct line of distance between them of 861 G. miles.

Between Fezzan and Cairo, there are certain notices, which enable us to arrange the intermediate positions with some degree of general accuracy. In the first place, Edrisi and Abulfeda furnish, between them, a complete chain of distance in journies; together with three *cross* lines of distance, from the coast, at very convenient intervals for determining the direction of the longer line; which is far from being straight, since it leads through several Oases, or fertile tracts, in order to obtain refreshments and water for the caravans. A second aid is derived from the number and arrangement of the caravan journies.

The principal bend in the line between Fezzan

⁹ M. D'Anville has greatly misplaced the capital of Fezzan: for it stands in his Map of Africa, about $2\frac{1}{2}$ degrees of longitude too far to the west; $1^{\circ}\frac{1}{3}$ of latitude too far to the north. In effect, it is made to bear to the south-westward, instead of the south, of Mesurata.

and Cairo, is nearly about the middle of it, at *Augela*: and at this place, fortunately, a line of distance from *Barca* (situated near the sea coast of *Libya Pentapolis*) to *Augela*, determines the position of the latter¹.

Hadjee Abdalla reckons 53 journies of the caravan between Fezzan and Cairo; of which 26 arise between the former and *Augela*; 27 between the latter and Cairo². These give, on the direct line, a proportion of 16,3 G. miles per day, nearly: but as the distance is increased by the angle, at *Augela*, from 861 to 869 miles, the mean rate will be increased to 16,4. The process of fixing the exact, or rather approximated, position of *Augela*, although tedious, must be gone through in the first instance; otherwise, neither the intermediate positions, nor the place of the Oasis of Ammon, the ultimate object, can be arranged with precision.

Edrisi allows 10 journies between *Barca* and *Augela*. His ordinary scale is 19 G. miles for each day, but as it appears that the mean rate is no more than 18, on 44 journies between *Bahnasa* in Upper Egypt, and *Zuela* in Fezzan, through *Augela*, it may be proper to adopt it *here*; and then 180 miles will be the distance between *Barca* and *Augela*³.

¹ See the position of *Barca*, in the Map at page 183.

² See Proceedings of the Afr. Assoc. for 1790, chap. x. Leo allows 60 journies; Mr. Browne and Mr. Ledyard, 50 each. The mean of the *four* accounts, is $53\frac{1}{4}$: differing only a fraction from Hadjee Abdalla.

³ The following is the statement of the road from Edrisi and Abulfeda.

Bahnasa to *Santariah*, 14 journies: (Abulf. Tab. Egypt,

Here then are given *two* sides of *each* of the two triangles, formed by the points of Cairo, Barca, and Augela; and by Fezzan, Barca, and Augela; the *third* sides of which triangles are to be found in the proportioned distance between Cairo and Fezzan, through the point of Augela: and the result is, that the 27 journies between Cairo and Augela, give 443; and the 26, between Fezzan and Augela, 426 G. miles; and that the mean caravan journey comes out 16,4, on each of these lines; although on the direct line between Fezzan and Cairo, it fell short of 16,3. Moreover, it appears, that Augela falls in latitude $30^{\circ} 3'$; longitude $22^{\circ} 46'$; by this result.

It may be proper to remark, that although it be true, that the country in the line of the road on the *west* of Augela, is more mountainous and rough than that on the *east* ⁴, yet that the circuitous nature of the road, on this side, by its leading through *Seewa*, so fully balances the loss of direct distance on the other, that Augela may be allowed to stand in the position assigned to it.

We shall next examine how this position accords with the distances allowed by Edrisi and Abulfeda.

The former, it has appeared, page 212, allows 20 journies between Zuela and Augela; or, according to the mean rate above adopted, 360 G. miles.

article Bahnasa): to Augela, 10 (Edrisi, p. 41.): to Zala, 10: to Zuela, or Zawila, 10 (Ed. p. 40.): total 44 days. The distance through these points, on the construction, is 795 G. miles; and, consequently, the daily rate 18.

⁴ See Proc. Afr. Assoc. 1790, chap. x. Eleven of the journies are through rocky deserts, and over mountains.

Zuela is a known position, 60 miles from the capital of Fezzan, to the east somewhat north; and in the road towards Augela. Of course, 420 miles are to be taken for the distance between Fezzan and Augela; and 426 has appeared to be the result arising on the proportioned caravan journeys: or 6 only, more than the other. That the 20 journeys lie in one direct line, is proved by the position of Zala; and the 60 miles from Fezzan to Zuela, differ so little in bearing from the other, as to render any allowance unnecessary⁵. In effect, then, the position of Augela rests on three lines of distance which intersect each other nearly in the same point; that is, the 10 journeys from Barca, and the 20 from Zuela; together with the proportioned distance from Cairo and Fezzan.

Nothing can well be more satisfactory than this general result: but besides this, the *data* on the side of Egypt agrees to the interval, although those data can only be admitted as such, on a supposition that the author (Abulfeda) has by mistake substituted *Bahnasa* of the *Wah*, for that of *Egypt*; a supposition extremely probable, as the position ac-

⁵ *Zuela* is said to be eight days from *Wadan*, nine southward from *Sort*; (Edrisi and Abulf.): and *Zala* is nine SE from *Sort*; ten NE, or between the east and north, from *Zuela*. Consequently, *Zala* falls in the line between Fezzan and Augela. See also the Map at page 183. Care must be taken not to confound *Zuela* and *Zala*; the former lies within Fezzan; the latter midway between Fezzan and Augela. There are several places of the name of *Wadan*.

The position of *Sort* has been given in page 211.

cords perfectly with the one, and differs more than a *third*, from the other ⁶.

If then it be admitted, that Abulfeda meant to say, that *Santariah* (a celebrated *Oasis*, and no doubt that of Seewa), was situated at 14 journies from the *Egyptian* Bahnasa, instead of that of *Al Wahat*, the distance between Augela and Cairo will be clearly made out. For the position of the Egyptian Bahnasa is well known, in respect of Cairo (being 83 G. miles to the SSW of it, and at the canal of Joseph); and the interval on the construction, between this Bahnasa and Augela, is 428; whilst Abulfeda and Edrisi allow 24 journies, equal to 432. The space between Augela and Santariah being 10 journies, according to Edrisi; 14 will of course remain between Santariah and Bahnasa ⁷.

At all events, the position of Santariah in respect of Augela, remains uncontroverted. For the reported distance of 10 journies, or 180 miles eastward from Augela, is conveyed as a positive notice; and Abulfeda allows eight journies to it, from the *lesser* mountains on the sea coast; taken unquestionably for the *Lesser Catabathmus*, near the

⁶ The subject of Bahnasa has been amply discussed, in page 201, *et seq.*

⁷ As a farther confirmation of the interval of distance between Cairo and Fezzan, we learn from Edrisi (see above, p. 202.) that it is 40 journies between *Cairo* and *Tamest*, or *Temissa*, in Fezzan. The space on the construction is 749 G. miles; allowing a rate of 18½ per day; or only ¼ of a mile short of Edrisi's general scale, which is 19: and ¾ short of the result between Bahnasa and Zuela.

Hermæan Promontory. Edrisi allows nine journies from the *sea coast*, but without any discrimination of place. If we meet the line of 180 from Augela, with the 144 from the *Hermæan* Promontory, *Santariah* will fall in latitude $29^{\circ} 9'$, longitude $26^{\circ} 5'$.

It appears very certain that the *Santariah* thus spoken of by Abulfeda and Edrisi, is the same place with the *Seewa* or *Siwa*, of our Maps; since the route and observations of Mr. Browne prove it. It will appear also to be the Oasis that contained the temple of *Jupiter Ammon*, the remains of which have been recently discovered by Mr. Browne, although he declines to regard them as such, in his book. It will be proper, therefore, as the next step of this investigation, to compare the position of *Santariah*, with that of *Seewa*; for in adducing the evidence for the position of *Jupiter Ammon*, it is highly important that the reader should not be left in doubt, whether there is more than one place that might suit the general position and description. It will no doubt appear very clear to him, that *Seewa* and *Santariah* are one and the same place. We shall here compare the geographical positions alone; meaning to compare the descriptions afterwards.

Mr. Browne set out from Alexandria, for the Oasis of Ammon, with an intention of following the same general line of direction, described by the historians of Alexander, to have been pursued by that prince. Accordingly, he went along the coast, westward, to a station, about 20 G. miles short of Al Bareton (the ancient *Parætonium*), and then struck inland to the SSW, and afterwards more westerly.

On the first line, along the coast, he travelled $75\frac{1}{2}$ hours; and on the latter, $62\frac{1}{4}$. The rate was regulated by the pace of the camels; which experience points out to be about two G. miles per hour, in direct distance, on ordinary ground, and on lines of this length^a. Perhaps, along an indented coast, like the one in question, (for Mr. Browne seldom lost sight of the coast), something may be deducted: and the more so, because Parætonium stands at 169 G. miles from Alexandria, in M. D'Anville's Map; and the $75\frac{1}{2}$ hours, at two miles per hour, would leave only 18 for the distance of the last station on the coast, from Parætonium. Accordingly, 149 only are allowed^b.

Mr. Browne had furnished himself with a compass, amongst other instruments, and attended to the direction of the route the whole way. The particulars, he has very obligingly communicated, since the publication of his valuable Book of Travels; and they supply the following information, respecting his line of course inland:

^a The rate is $2\frac{1}{2}$ *British* miles per hour on the road, which produce somewhat above two G. miles in direct distance. But this depends on the nature of the ground.

^b Alexander is said to have travelled 1600 stadia along the coast, to Parætonium (Arrian, lib. iii.): these may give 137 G. miles, which distance is yet 12 miles short of Mr. Browne's station, and 32 short of Parætonium. It should rather be 2000 stadia, or even more. There is reason to suppose that Alexander did not leave the coast, as Mr. Browne did, before he came the length of Parætonium.

Pliny, lib. v. 5, allows 200 MP. between Alexandria and Parætonium: or just 160 G. miles.

That the bearing of Seewa, was south 19 W, (clear of variation) from the station 20 miles to the eastward of Parætonium : and the distance, $124\frac{1}{2}$ G. miles, (being two per hour) on that course, gives $117\frac{1}{2}$ difference of latitude, $40\frac{1}{2}$ of westing : consequently, as the station appears to have been in $31^{\circ} 7'$, the latitude of Seewa, by account, should be $29^{\circ} 9' 30''$: and the longitude $26^{\circ} 25' 15''$ ¹.

The latitude of Seewa, by Mr. Browne's observation, was however $29^{\circ} 12'$: so that if any dependance could be placed on the truth of the latitude of the sea coast, the distance infers a more westerly bearing by $3\frac{1}{2}$ degrees ; and an addition to the diff. long. which would place Seewa in $26^{\circ} 18'$, or $7\frac{1}{4}$ west of the former.

¹ Mr. Browne, on leaving the coast, went SSW for the first day and half ; but then more to the W, so as to make a course of about S 31 W to the village of *Karet-um-el-Sogheir* ; and from thence to Seewa, about S 40 W. The variation is taken at 15° westerly : and as Sogheir appears to be situated at about two parts in three of the whole 62½ hours, from the station on the coast, one short of Seewa ; the general course, clear of variation, will be S $18\frac{1}{2}$, or say 19 degrees W. Hence arises a diff. lat. of $1^{\circ} 57' 30''$; departure $40\frac{1}{2}$; and Seewa, by account, would be in $29^{\circ} 9' 30''$ lat. and $20\frac{1}{2}$ G. miles west of the meridian of Parætonium.

✎ It does not appear that Mr. Browne noted the variation in this track : but in Darfoor, he found it to be 16 degrees. His station was about the parallel of 14° N, and lon. 28 E. In our Variation Chart in the Proceed. Afr. Assoc. 1798, $17\frac{1}{2}$ is found in the same spot. Mr. B.'s observation is in proof of the system, there advanced : the difference of $1\frac{1}{2}$ degree, whether arising from the difference of compasses, or from error in the calculation, is of little importance to the system.

A third result arises from the given number of journies of the caravan, from Cairo to *El Sogheir*; combined with Mr. Browne's distance, from the sea coast to the latter place; and thence to Seewa. It is to be observed, that the village of *Karet-um-el-Sogheir* is the *Umsequir* of Hadjee Abdalla; and although placed *by him*, or very possibly by the mistake of the *interpreter*, at one journey only to the NE of Seewa, was found by Mr. Browne to be *two* long journies from it. Thirteen journies of the caravan are reckoned between Cairo and the above village; and these, from the angle made by the road at Seewa, require 16,9 G. miles in the detail. The 13 journies, then, are equal to about 220 miles; which line of distance intersecting the route of Mr. Browne at a point two parts in three, from the coast, towards Seewa (see the last note), or in positive distance $84\frac{2}{3}$ G. miles, places El Sogheir in lat. $29^{\circ} 42'$, lon. $27^{\circ} 6'$. The remaining $\frac{1}{3}$ of the route to Seewa, equal to $42\frac{1}{3}$ miles, laid off to the parallel of $29^{\circ} 12'$, places that town in lon. $26^{\circ} 32'$.

It is proper, however, to remark, that although this statement is admitted, in order that the route may be considered in every point of view, yet that it is manifestly erroneous on the face of it: because it supposes El Sogheir to bear only four degrees to the W of S from Mr. Browne's station on the coast; and he found it to bear about S 13 W *true*. And there can be no question that the other results should be preferred.

The difference of $6\frac{1}{2}$ G. miles (or $7' 15''$ of longitude) between the two former results, is hardly to be

regarded in this question : and it is somewhat remarkable, that a bearing and distance taken in so coarse a way, should agree so nearly to the difference of latitude ². The general result is therefore very satisfactory ; and it may be preferable to take the mean of the two calculations, which places Seewa at a bearing of S 11 W from Parætonium, distance 119 G. miles : and in longitude $26^{\circ} 21' 30''$. At the same time the Author is strongly of opinion, that Seewa is somewhat more to the west ; and the reason is, that in cases of this kind, where the rate is determined by camel travelling, the *distance* is more susceptible of accuracy than the *bearing*. The operation of the distance, simply, carries it, as we have seen, more to the west : and it is possible that even the rate of two G. miles per hour, may be too low ; but it would require a very critical knowledge of the ground to determine the question with accuracy. Such are the authorities for the position of SEEWA.

Now, as it has appeared that Santariah, according to the authorities, is situated in lat. $29^{\circ} 9'$, and Seewa in $29^{\circ} 12'$; and also that the former is situated in lon. $26^{\circ} 5'$, the latter in $26^{\circ} 21' 30''$; which difference is equal only to $14\frac{1}{4}$ G. miles in easting, and 3 in northing ; whilst the place itself occupies a space nearly equal to six miles, by four and a half, and is surrounded by a wide desert ; no

² It may however be recollected, that Mr. Carmichael, on a line of 720 miles between Aleppo and Bussora, erred no more than six or seven degrees in the bearing. See Phil. Trans. for 1791.

kind of doubt can be entertained that both names are applied to the same place. It may also be remarked, that 18 G. miles only have been taken for each of the 10 journies between Augela and Santariah, because *such* was the proportion arising on the whole line of 44 journies between Egypt and Fezzan: but it is evident that, in the detail of a route of which we have not a competent knowledge, places often lie wider of the direct line, and thus occasion larger intervals than are allowed for in the gross: and, moreover, that the intervals are not always well proportioned to each other, although one is compelled to arrange them as if they were. The ordinary day's journey, in Edrisi, is 19 G. miles, and if this be allowed to operate between Augela and Santariah, this latter would fall precisely at Seewa, according to Mr. Browne's distance and parallel.

Thus we conclude the construction of the Libyan geography; and proceed to the examination of the authorities given by the ancients for the Oasis and Temple of Ammon, which will be found in the next Section.

SECTION XXI.

THE SUBJECT CONTINUED—OASIS OF JUPITER AMMON ;
ITS TEMPLE AND ORACLE.

The THIRD Oasis, that which contained the Temple of Jupiter Ammon—Country of Ammon distinct from Egypt—Position of the Oasis, as determined by the authorities of the Ancients collectively—General Agreement of these Authorities—Seewa, lately visited by Mr. Browne, answers decidedly to the Oasis of Ammon : and the Remains found there, appear to be those of the Temple—No other Oasis in that quarter—Elucidations of the Subject, from Ptolemy—Ancient Descriptions of Ammon compared with those of Seewa ; and that of Seewa with Santariah—Some Remarks on the Temples and Oracles of Jupiter Ammon—Greeks borrow their Mythology from the Egyptians—Ammon, in Africa, the same as Jupiter—The Oracles of Jupiter at Thebes, Ammon, and Dodona, similar to each other—Stupendous Remains at Thebes—Silence of Herodotus respecting them, remarkable—The Edifice discovered at Seewa resembles certain of those at Thebes and Hermonthis—Remark on the Style of Egyptian Architecture—The Remains at Seewa, unquestionably Egyptian—Mr. Browne entitled to great praise for the perseverance and zeal which led to this interesting discovery.

THIS OASIS, as it contained the celebrated oracle of JUPITER AMMON, visited by Alexander, although in dimensions the least, is of the greatest importance of the three as it respects public curiosity.

The state, or kingdom of Ammon, occupied, in the time of Herodotus, a considerable extent of space in Libya, between Upper Egypt and the Desert of Barca, on the E and W (Melpom. 181, 182), and between the Nomadic tribes along the coast of the Mediterranean, on the N, and the great Libyan Desert on the south. It included, therefore, of course, a part of the tract of *Al Wahat*, before described: although the Oasis of Ammon is not included in *Al Wahat*, in the modern division of Africa. (See the map at page 183¹).

The position of the Temple of Ammon will first be ascertained by the authorities derived from the ancients: after which it will be seen how far it agrees with any of the Oases, or Wahs, described by the moderns. And we have little doubt but that the reader will finally agree with us, in fixing it at the modern town of SEEWA, known to the Arabian geographers, as we have shewn, under the name of SANTARIAH.

Herodotus places it at ten journies to the eastward of Augela: but it is remarkable that he does not say how it lies with respect to any place in the opposite quarter. He merely says, "that the *territories* of the Ammonians, who possess the temple of the Theban Jupiter, are the people *nearest* to Thebes; from which they are a ten days' journey

¹ One is naturally induced to inquire what habitable lands, besides the Oasis of Ammon, were included in this kingdom. No satisfaction, however, can be obtained. It is possible that the Oasis itself might form the most populous part of it.

distant." Melpom. 181. But this has no reference to the temple itself, which is more than twice that distance from Thebes. It appears singular, that he should not have mentioned its distance, either from Thebes, or from Memphis; since he gives it from Augela, a more uncertain situation: and more especially, too, as he speaks of the march of the army of Cambyses to it, from Thebes. For in Thalia, 25, 26, he relates that this prince "sent an army against the Ammonians, with orders to burn the place, or temple, from whence the oracles of Jupiter were delivered;" at the same time that he himself set out on an expedition against the Ethiopians. Both were unsuccessful: and the only difference was, that a remnant of the latter returned; but the former, according to the Historian, were never more heard of. They arrived at the Greater Oasis, in their way to Ammon; to which it was at least 20 days' march; but were either overwhelmed with sand, or left by their guides to perish in the Desert².

It is unquestionable that the route from Thebes to Ammon must have lain through the *Greater Oasis*; but the proper and safe route would have been from Memphis; from whence it was also about one-third nearer than from Thebes.

² M. Savary and M. Poncet have both given a frightful idea of the journies across the Libyan sands. Nothing, however, appears more likely, than that the armies perished through fatigue and want of water. Mr. Browne does not so readily give into the belief of the possibility, of a living person being overwhelmed with sand. See his book, pages 248, 249.

Pliny fixes the temple at twelve journies from Thebes, and as many from Memphis, but whatsoever truth (if any) there may be, in the *latter* particular, the statement of the distance from Thebes is evidently wrong. But laying out of the question (at present) the position of it, in respect of any place to the *eastward*, it will be found that the statements, in respect of places on the *north* and *west*, will be satisfactory enough; taken in a general point of view.

Pliny, then, lib. v. c. 5 and 6, gives the distances between Cyrene and the Temple; Cyrene and Alexandria; Alexandria and Parætonium, respectively; and it was from *about* the latter place that Alexander struck off inland, towards the temple. Again, Strabo, Diodorus, and Curtius, furnish the distance between Parætonium and Ammon, which Pliny and Arrian omit. Herodotus, as we have shewn, gives its distance from Augela; the position of which has already been very well approximated, from the papers of the African Association, and from Edrisi. From all these, collectively, we hope at least to *approximate* the situation of this celebrated temple and oracle.

There can be little doubt but that Pliny's distances are given from computation only, and not from mensuration; so that it will be satisfactory to compare them with known distances, in the same quarter, which he gives us an opportunity of doing. For he says, lib. v. 6, that the distance is 525 MP. from Alexandria to Cyrene by land: in which is also included a separate line of distance of 200 MP. from Alexandria to Parætonium. Now, it appears by

M. D'Anville's map of the coast of Africa, that the former distance, *direct*, is 460 G. miles, and the latter, 169: whence there results a proportion of 70 MP. to a degree on the former, 71 on the latter, whilst 75 is the acknowledged rate of proportion³. There are, moreover, some other distances in this quarter, given by the same author in which there appears a similar excess, in point of scale. But the difference, notwithstanding, is not great; and we may therefore allow Pliny to have been *tolerably* well informed on the subject. Solinus allows precisely the same distance as Pliny, lib. v. 5, between Cyrene and the temple; that is, 400 MP.: and these, at 75 to a degree, are equal to 320 G. miles.

Strabo, page 799, gives 1300 stadia (of 700 to a degree) between the sea coast, near Parætonium, and the temple; which are equal to about $111\frac{1}{2}$ G. miles. But besides this authority for the positive distance in stades, there are notices in Diodorus and Curtius, from whence it may be collected, that Alexander was seven or eight days on the road. And as these are not to be taken on the footing of ordinary marches of an army, but rather as approaching to ordinary journies, 16 G. miles per day may be allowed (10,6 is an ordinary march): whence 112 to 128 miles will be the result: or taking the mean of the three, about 117. It would have been absurd not to have prepared for a more expeditious movement than common marching, when delay threatened destruction⁴.

³ D'Anville, *Mes. Itin.* p. 44, *et seq.*

⁴ From Diodorus, lib. xvii. c. 5, eight journies may be in-

According to the historians of Alexander, that prince kept along the sea coast, from the site of Alexandria to Parætonium; and then struck directly inland towards the temple; thereby making the shortest line of course across the Desert. Strabo says, from Callisthenes, p. 816, that his course was *southward*, or *south*, from Parætonium to the temple: and it will appear that our geographical construction, founded on the general result of the best authorities, makes it little more than a point and quarter to the west of south.

Mr. Browne appears to have followed nearly the same line with Alexander, but not exactly, as he left the coast at about 20 miles short of Parætonium (Al Bareton), where a fine well afforded the means of recruiting their stock of water: p. 16. Moreover, Alexander, whilst on the way, was supplied from casual sources; Mr. Browne from the wells of a village (*El Sogheir*, p. 17.); and somewhat wide of the direct route. This gentleman observes, on leaving the well at the sea coast, that from "thence to Seewa, there being *little* or *no* water, we were obliged to use all possible diligence in the route." Alexander's route lay still more wide (to the west) of *El Sogheir*; and it appears probable that there are no *springs* whatsoever in that line. But his guides do not appear to have managed so well as those of Mr. Browne.

ferred: and from Curtius, iv. 7, about seven. It is said by the former, that having expended their stock of water at the end of four days, they came to a valley, in which, from the abundant rain that had just fallen, they filled water for four days more.

To return to the lines of distance. It will be found that those of 320 from Cyrene, and 117 from Parætonium, fall together in latitude $29^{\circ} 19'$; long. $26^{\circ} 3'$: and that they leave an interval of 175 miles between the position thus pointed out, for the temple, and Augela; falling short by several miles of the 10 journeys allowed by Herodotus; but which difference does by no means impeach the general agreement of the authorities⁵. So that it may with truth be said, that the *three* lines from Augela, Cyrene, and Parætonium, coincide within five miles; and leave no kind of doubt respecting the position in which the ancients meant to place the oracle of Ammon⁶.

The reader will be pleased to recollect that the position of Seewa, as placed above (page 220), on the authority of Mr. Browne, is in latitude $29^{\circ} 12'$ by observation; and in longitude, by deduction from his place of outset, $26^{\circ} 21' 30''$; whilst that of Santariah, deduced from the Arabian geographers, was lat. $29^{\circ} 9'$, long. $26^{\circ} 5'$: so that the whole difference of parallel is only ten miles, and of longitude $18' 30''$, equal to 16 G. miles. In this arrangement, we have adhered *literally* to the ancient authorities; but it will be found, on a more liberal discussion of

⁵ Ptolemy allows 157 only.

⁶ It is certain that Mr. Browne was told that Cairo and the Greater Oasis were both of them but 12 journeys from Seewa; but this could mean only such journeys as Mr. Browne made from the sea coast to Seewa, as we have before remarked in p. 199, which see. The 12 journeys reported by Pliny, may have been of the same kind. Hadjee Abdalla reckons 13 caravan journeys from El Sogheir to Cairo; and El Sogheir is two long journeys from Seewa; as Mr. Browne proved.

them, that the position of the oracle, will approximate to that of Seewa, as pointed out by Mr. Browne.

In the above calculation, we admitted the *longer* line of distance from Cyrene, in preference to the *shorter* one from Augela; because the former was reported as a *positive quantity* of distance (that is, in Roman miles), but the latter, in days' journies only. It has been shewn, that the distance between Augela and Santariah, in the Arabian geographers of modern times, is calculated also at 10 journies: that is, no doubt, just the same as the ancient reckoning, between Augela and the oracle. And these cannot, according to Edrisi's scale, be taken at the lowest, at less than 18 G. miles in direct distance; or 180 for the whole line; and possibly 190. See above, page 212.

Again, it has appeared, that in the distances reported by Pliny, in this quarter of Africa, the scale appears to be greater than that of 75 MP. to a degree; and that 70 to 71 were the general proportions. It is probable that Pliny, generally speaking, assumes his numbers of Roman miles, from the stades reported by the Greeks; but it is certain that, in the present instance, he must have reckoned otherwise. But taking his scale as we find it, in this quarter, the 400 MP. between Cyrene and the temple will produce *more* than 820 G. miles: and this will also have the effect of approximating the position of Ammon to that of Seewa; which falls about 18 miles beyond the line of 320 miles from Cyrene: agreeing nearly with the 190 from Augela. There is little question but that this result ought to

be preferred to the former one; although the difference is not so great, but that either of them might be received.

In effect, then, the coincidence of the authorities, generally, must be allowed to be very close: for when it is considered that all the distances are given by computation; the points of outset very far distant from each other, and some of them not very exactly defined; that the latitude of Parætonium, or of the coast near it, may not be very correct in the charts; in short, that the only exact point to be reckoned on in the whole matter, is the latitude of Seewa, as taken by Mr. Browne; no greater satisfaction could be expected. The variations between all the authorities, ancient and modern, amount to little more than a space equal to thrice the length, and twice and a half the breadth of the Oasis in question; which is itself, at the utmost, only six miles long, and four and a half or five in breadth. And it is pretty clearly proved, that no *other* Oasis exists in that quarter, within two, or more, days' journey; but, on the contrary, that Seewa is surrounded by a wide desert: so that it cannot be doubted that the Oasis of Seewa is the same with that of Ammon; and the edifice found there, the *remains* of the celebrated temple, from whence the oracles of Jupiter Ammon were delivered.

The people of Seewa know of no other Oasis, or of any ruins in that quarter; for the small rocky spot, surrounded by a lake of salt water; which was also visited by Mr. Browne, is by no means to be regarded as an Oasis. As they have "a communi-

cation with Egypt and Fezzan; and the wandering Arabs pass the Desert in all directions, in their visits to Seewa, from Al Wah, Faiume, Thebes, from Fezzan, Tripoly, Cairo, and Alexandria, it is very unlikely that any considerable ruins should exist within three or four days of Seewa, and unknown to them; still less so, that they should be ignorant of any fertile spot, where might be found water, fruits, and other acceptable refreshments:" since their visits to Seewa appear to be for the purpose of "furnishing themselves at a cheaper rate, with many articles of food, than they can be in the towns of Egypt". It may be added, that Mr. Browne himself approached it by the NE, left it by the NW, and fairly made a tour round it, at the distance of two or three days' journey, from his station in the NW, passing it to the south, at the distance of 32 G. miles (for he went into the parallel of $28^{\circ} 40'$)⁸, and thence falling again into the route to Alexandria.

Thus he gained a parallel, *far beyond* the utmost range allowed by the ancient writers, to the Oasis of Ammon; we mean those who describe its position by *distances* from *known* places. Ptolemy indeed, in his tables, carries it so low as 28° ; but then he places Augela, which is known to be in about 30° , in the same parallel with Ammon. Two of the people of Seewa accompanied Mr. Browne, in his expedition to the south-west, and as they originally proposed to carry him to a watering-place, in that quarter, it is obvious that they know the country to

⁷ Mr. Browne's Travels, p. 22.

⁸ Ib. p. 27.

the distance of two and a half or three days. Besides, it is altogether improbable, that, from their habits of life, and communications with those who traverse the Libyan Desert, they should be unacquainted with any fertile spot that may exist in that quarter.

Before we quit the subject of the geographical position of this place, it will be proper to say a word concerning Ptolemy's geography of this quarter (since his residence in the neighbourhood ought to add weight to it) making due allowances for a distorted construction, arising from excess of longitude: and in the *present* case, to errors of latitude, almost equally gross: so that *relative position*, and not the scale of distance, is to be regarded.

In Ptolemy (Africa, Tab. III.) we find *Siropum* ⁹, answering to Karet-um-el-Sogheir, in its relative position to *Ammon*, the *Fons Solis*, and the *Lesser Oasis*; if we allow the *three* latter to be represented in modern geography by Seewa, (or Santariah) Ain Caïs, and the Oasis which contains Bahnasa.

Between Siropum (say El Sogheir) and Memphis, in the position in which we should look for the mountainous Desert of *Le Magra*, which is seven journies across¹, there is found in Ptolemy a corresponding tract of mountainous country under the name of *Ogdamos*. Again, at the distance of 64 miles on Ptolemy's scale, to the SW of Siropum, stands the city of *Hammon*, unquestionably meant

⁹ *Sirpicum*, in Solinus.

¹ Proceedings Afr. Assoc. for 1790, chap. x. and xii.

for the temple and capital of the Ammonians. The reader will perceive, by a slight reference to the Map, at page 183, sup. that these places lie in respect of each other, as Seewa and El Sogheir do. Ptolemy has 205 G. miles between Parætonium and Ammon, instead of our 120: and it will appear that the 64 bear much the same proportion to the 205, as the distance between El Sogheir and Seewa, does to our 120. This is a marked circumstance, and worthy of attention².

And lastly, though not less to the purpose, the bearing of Ammon from Parætonium, in Ptolemy, has a general agreement with the bearing of Seewa, from the same place, according to the observations of Mr. Browne: the former being S 22 W, and the

² It may not be amiss also to state a particular or two, that occurs in the road from Cairo through *Temissa*, &c. given by Edrisi, as they throw some light on Ptolemy's geography of the parts near Ammon.

From Bahnasa (in the *Wah*) four stations, according to Edrisi, reach to *Ain Caïs* (or fountain of Caïs) which, therefore, should be about five days short of Seewa or Santariah: for although the road does not *appear* to lead through that town, or Oasis, yet, from circumstances, it cannot pass far to the southward of it. Now we find in Ptolemy, much in the same relative position, and at the same proportions of space, respectively, from the Lesser Oasis and from Ammon, (that is, $\frac{2}{3}$ from the *Oasis*, $\frac{5}{9}$ from Ammon) the *Fons Solis*; which therefore agrees to *Ain Caïs*.

Again, at a station eight journies from Bahnasa, which should be about one journey *short* of being *opposite* to Seewa, the river *Costara* occurs in the same route: and it being the only *running* water mentioned in the whole route, nothing appears more likely, than that it should be formed of the springs that rise in the Oasis of Seewa.

latter S 11 W; whilst the bearing of Ammon, resulting from the ancient authorities, generally, is S 20 W; and Santariah, by the Arabian geographers, S 18 W².

The three Oases, then, will form nearly a right-angled triangle, whose legs, facing the N and E, will be nearly equal; that is, the Lesser Oasis will represent the right angle at the north-east, the Greater Oasis the southern extremity of one leg, and the Oasis of Ammon the western extremity of the other.

Thus far we have proceeded merely on the ground of geographical agreement, between the position of the Oasis of Seewa and that of Ammon. But there are so many circumstances of agreement also between the ancient and modern *descriptions*, that had the former proofs been less strong, these *alone* might, perhaps, have sufficed: so that there is an agreement throughout.

We shall therefore collect the scattered notices that occur in the ancient authors, and compare them with those furnished by Mr. Browne; whose candid and modest exposition of them, entitles him to the firmest belief: and who, whilst he only contends for the *antiquity* of the edifice, so adventurously discovered; and its originality, as a work of the ancient Egyp-

² It should be recollected that Mr. Browne had no opportunity of comparing the relative positions of Parætonium and Seewa: it is possible, therefore, that Seewa may bear more to the west. It is placed in the Map, according to its latitude, and distance from the coast; whence it bears about S 13 W from Parætonium, and stands in longitude 26° 18'.

tians ; allows the facts to speak the strongest language for themselves, and to pronounce it the veritable remains of the temple of Ammon.

Diodorus (lib. xvii. c. 5.) says, that the Oasis of Ammon is 50 stadia in length, and the *same* in breadth. Arrian, (lib. iii.) says, little more than 40. [The highest of these statements, supposing the *Roman* stade to be meant, is rather short of six B. miles.] It lies in the midst of an extensive and arid desert.

—“ It is full of pleasant fountains : watered with running streams, and planted with all kinds of trees ; most of them bearing fruit.” (Diodorus.)

“ It is planted with *olive* and *palm* trees, and watered with dews.” (Arrian.)

“ It is watered with *many* streams, and *encompassed* with trees, that grow so thick as to skreen it on all sides

Mr. Browne, (p. 23,) says, “ The Oasis which contains the town of Siwa, is about 6 miles long, and $4\frac{1}{2}$ or 5 wide.” And (p. 17,) “ Siwa answers the description given of the Oases, being a small fertile spot, surrounded on all sides by desert land.”

“ Water, both salt and fresh, abounds : but the springs which furnish the latter are most of them tepid.” (P. 24.)

“ A large proportion of the space is filled with date trees (*palms*) ; but there are also pomegranates, figs, and *olives*, apricots and plantains ; and the gardens are remarkably flourishing.— They cultivate a considerable quantity of rice :

from the rays of the sun." (Curtius, lib. iv. c. 7.)

And, "The temple and palace stand in the middle of a wood : and in a second wood, is the *Fountain of the Sun*." (Ib.)

Strabo only speaks generally of its abounding with *water* and palms. Page 838.

"In the middle of the sacred grove, inhabited by the *Ammonians*, is a castle fortified with a triple wall, &c. containing the temple, palace, and a place of arms ; and not far from the castle, stands *another* temple of Ammon, shaded round with many fruit trees ; next to which is a fountain called *Solis*," &c. (Diodorus.)

Herodotus speaks of the temple, the oracle, and the kingdom of Ammon, in different places : as in Euterpe, 32, 42,

—the remainder of the cultivable land furnishes wheat enough for the consumption of the inhabitants." (P. 23, 24.)

—"It was about half an hour from the time of our entering on this territory, by a path *surrounded* with *date trees*, that we came to the *town*, which gives name to the district." (P. 17.)

"We passed along some shady paths between gardens, till at the distance of about two miles, we arrived at what they called the *ruins*, or *Birbe*." (P. 19.)—"It resembles too exactly those of the Upper Egypt, to leave a doubt that it was erected and adorned by the same intelligent race of men. The figures of Isis and Anubis are conspicuous among the sculptures : and the proportions are those of the Egyptian temples, though in minia-

55 : Melp. 181. "The Egyptians, (says he) call Jupiter, AMMOUN;" and it appears that its antiquity was equal to that of the oracle of *Dodona* : Euterpe, 54, 55.

Diodorus says, (xvii. 5.) that "it was reported, that this temple was built by *Danaus* the *Egyptian*."

It may be remarked, that the Arabian geographers are silent respecting any remains of antiquity, in *Santariah* (i. e. *Seewa*); but *M. Schlichtorst*, (in his *Geographia Africæ Herodotea*, p. 151, 152.) says, that "some remains of the temple of Ammon are still to be seen, if the travellers to *Mecca* may be credited; the place is called *Hesach-bir*, or *Moles Lapidum*."

Herodotus describes, Melp. 181, "the Foun-

ture. The rocks which I saw in the neighbourhood, being of a sandy stone, bear so little resemblance to that which is employed in this fabric, that I am inclined to believe the materials cannot have been prepared on the spot." (P. 27, 28.) In p. 19, he says, "it is built of massy stones, of the same kind as those of which the pyramids consist⁴."—

"The soil around seems to indicate that *other buildings* have once existed near the place; the materials of which either time has levelled with the soil, or the natives have applied to other purposes. I observed, indeed, some *hewn stones* wrought in the walls of the modern buildings."—(P. 20.)

"One of those springs, which rises *near the*

⁴ More will be said in the sequel respecting this remarkable edifice.

tain of the *Sun*," at Ammon; said to vary in its temperature, so as to be *warm* in the morning, but *excessively cold* at noon, &c.—He adds, that when it is coldest, they use it to water their gardens.

Arrian, Diodorus, and Curtius, all speak of it much in the same way. The two latter agree with Herodotus in saying that the water is *boiling hot* at midnight. And this remarkable spring, Diodorus places at, or near, the *lesser* temple: but Curtius, in a grove, which was distinct from the larger grove: and it is Diodorus *alone*, who speaks of a second temple; and therefore it is probably a mistake.

Herodotus and Strabo speak generally concerning the saltiness of the soil, of this region: and Strabo speaks also of the oyster and other shells,

building described, is observed by the natives to be sometimes *cold*, and sometimes *warm*." (P. 24.)

"Approaching Siwa," p. 17.) Mr. Browne says, "I observed through a large portion of the road, that the surface of the earth is perfectly covered

that abound in the quarter about Ammon. (P. 49.)

Arrian says, that the country about Ammon produces a kind of fossil salt. —Lib. iii.

“ The Ammonians are composed partly of *Egyptians*, and partly of *Ethiopians*: and their dialect is formed promiscuously of both those languages⁵.” (Euterpe, 42.)

with salt.” And p. 26, “ After the rains, the ground in the neighbourhood of Siwa is covered with salt for many weeks.”

“ The *complexion* of the people is generally darker than that of the Egyptians. Their *dialect* is also different—among those whose *costume* was discernible, it approaches nearer to that of the Arabs of the Desert, than of the Egyptians or Moors⁶.”

In the next place, we shall give the short descriptions of *Santariah*, that are found in the Arabian geographers.

Jacutus (quoted by Hartmann, in his Edrisi, p. 495), speaking of the three regions of Al Wahat, or

⁵ The Arabian geographers say of Santariah, that the inhabitants are a mixture of *Berbers*, (Barbarians) and Arabs.

⁶ Mr. Browne visited certain *catacombs*, in a rocky hill, close to the Oasis of Siwa. (P. 21.) They were about 30 in number: of dimensions 12 feet in length, 6 in breadth, and about the same height. This is mentioned merely to shew, that Egyptian customs had prevailed there.

the Oases, says, "The third is named the *Wah* (or Oasis) of the city of *Sinmaria*, or *Sanmaria*, (meaning no doubt *Santariah*), in which are abundance of palms; and mineral waters, which the inhabitants drink; but which are prejudicial to the health of strangers⁷."

Edrisi (Hartmann, p. 303, from the Parisian MS.) says, "Santariah is a small city, where there is a *Minber*: (pronounced *Mimber*: a pulpit or raised place, from whence the Koran, &c. is read)⁸. The inhabitants are a mixture of Berbers and Arabs. Palms are in abundance, but there are few fountains."

Abulfeda says that it is "an island in the arid Desert, surrounded with hills. That it is watered, and abounds with palms. Moreover, that it produces a pomegranate, that is at first bitter, but becomes sweet, when ripe; and that it proves unwholesome to strangers." (Africa, Tab. III. marginal notes). Perhaps this latter particular was originally meant to be applied to the water; as it

⁷ Mr. Browne says of Seewa, p. 24, "Such is the nature of the water, air, and other circumstances, that strangers are often affected with agues and malignant fevers."

⁸ The Author is indebted to his friend Mr. Wilkins, for this explication. It is to be recollected that Edrisi wrote early in the 12th century, at which time, the Mahomedan religion might not long have been introduced into this place. It may be observed that the inhabitants "are not in the habitual use either of coffee or tobacco;" (Mr. Browne, p. 25); which seems to arise from their secluded situation.

then agrees with Jacutus. Part of the sentence might have been misplaced.

Lastly, Ibn al Wardi thus speaks of Santariah : Hartmann, p. 303.

“ Schantaria is a tract of country, which has a city of the same name. It is inhabited by Berbers mixed with Arabs. In it are found iron mines. Between this city and Alexandria, there is a great desert,” &c.—Thus far the brief descriptions of Santariah ; which, as far as they go, apply equally to Seewa. We shall add to these, two remarks : the one, that those authors who have mentioned *Santariah*, have been silent respecting *Seewa* ; a place, surely, of too much importance to have been passed over. The other, that M. Delisle, in his *Geography of Africa*, 1707, has a city which he names *Si-ouah, ou Sant-rie*, in the position proper to Santariah. It is possible that M. Delisle had positive information to this effect.

To this may be added, that the people of Seewa, appeared to Mr. Browne to be ignorant of the name Santariah.

On the whole, it will be difficult to overthrow the weighty evidence, in proof of our position, that Seewa is the long sought for Oasis of Jupiter Ammon ; and that Santariah is only another name for Seewa ; a fact of considerable importance in the question, as it precludes that doubt and uncertainty, which a choice of places, possessing equal pretensions to the claim of preference, must have necessarily occasioned. As it may be conceived that the truth will appear yet clearer, by a close comparison

of the edifice at Seewa, with the Egyptian architecture, and more particularly with that of the remains of the temples in Upper Egypt, we shall enter somewhat at large into the subject ; prefacing it with some observations on the oracles and worship of Ammon.

Temples of JUPITER AMMON.

Herodotus speaks of FOUR oracles of Jupiter ; that is, at Egyptian Thebes ; at Libyan Ammon ; at Dodona in Greece ; and at Meroe the capital of Ethiopia. He says, that the one at Thebes was the *original* temple of that worship ; and those of Ammon and Dodona, were derivations from it.

If Herodotus was rightly informed concerning the establishment of the oracles at Dodona and Ammon, his report allows a high degree of antiquity to them : for he says, that when the Pelasgi consulted the oracle of Dodona, it was the *only one* in Greece, and was also by far the most ancient of them all. Euterpe, 52. And, in 54, 55, he tells us, that the oracle of Ammon was established at the same time with that of Dodona⁹.

⁹ Herodotus was told by the priests of the Theban Jupiter, (Euterpe, 54, 55,) that the two oracles of *Dodona* and *Ammon* were first established by two priestesses, who were violently carried away by the *Phœnicians* ; and at *Dodona*, that they were established by two black *pigeons* which flew from *Thebes*. He infers, not improbably, (57) that by these are meant two *black women*. It has been observed, that the same word in the *Thesalian* language signifies *dove* and *prophetess*.

He gives an instance, Euterpe, 52, of the simplicity, as well as the good intentions of the PELASGI. "These (says he), as I was informed at Dodona, formerly offered all things indiscriminately to the gods. They distinguished them by no name or surname, for they were hitherto unacquainted with either; but they called them GODS, which, by its etymology, means DISPOSERS, from observing the orderly disposition and distribution of the various parts of the universe. They learned, but not till a late period, the names of the divinities from the Egyptians, and Bacchus was the last whom they knew. Upon this subject, they afterwards consulted the oracle of Dodona, &c. They desired to know whether they might with propriety adopt the names which they had learned of the Barbarians, and were answered, that they might; they have accordingly used them ever since in their rites of sacrifice; and from the Pelasgi they were communicated to the Greeks." It had perhaps been better for mankind, if they had been content to follow the example of the Pelasgians, in agreeing not to dispute about matters, concerning which the wisest are so ignorant, that pretended explanations only serve to provoke fresh disputes.

He allows that the Greeks derived from Egypt not only the names of almost all the gods, but with them, many circumstances of religious worship also. And, says he, "that they are of *barbarian origin*, I am convinced, by my different researches." Euterpe, 50. Much the same is also said, in Euterpe, 4¹.

¹ There were, in Egypt, not only oracles of *Jupiter*, but also

It must be acknowledged that the heathen mythology appears to ordinary readers, to be not only a collection of childish fables, but also contradictory to itself, in many important points; as it is related by the different authors who have attempted to give systems of it. The less therefore, perhaps, that is said about it, the better. But since Herodotus himself allows that the Greeks borrowed so largely from the Egyptian mythology; and since also, Diodorus says, that the Egyptians, in imitation of the Ethiopians, DEIFIED their GOOD KINGS; why may not this Jupiter have been the king of Egypt and Libya, mentioned by Diodorus; the same who, he also says, was named AMMON; and the establishment of whose temple and oracle he refers to his son DIONYSUS? Diod. lib. i. c. 1: and iii. c. 4.

The name Ammoun or Ammon, is universally explained by the ancients, to mean the same as Jupiter, amongst the Africans¹. "The Egyptians, (says Herodotus, Euterpe, 42), call Jupiter, Ammoun; and I should think, this was the reason why the above people named themselves Ammonians." (He was speaking of the Ammonians of Libya).

He observes (58), that the two oracles of Egyptian Thebes and Dodona, "have an entire resemblance to each other²." And although he does not

of *Hercules, Apollo, Minerva, Diana, Mars, and Latona*. (Euterpe, 83.)

¹ Jupiter was named Ammon at *Carthage* as well as in Libya. Diodorus.

² "And thus," says he, "the art of divination, as now practised in our temples, is derived from Egypt: at least, the Egypt-

say the same of Ammon, yet no other idea can be inferred, from what is said of it. For laying out of the question, the story of the *two priestesses*, and of the *two black doves*, (allegorical of the same story) it is certain, that he speaks in other places, as if the oracle of Ammon resembled at all points, in respect of its religious ceremonies and institutions, that of Thebes. Thus he styles it, equally with that of Thebes, "the temple of the Theban Jupiter:" Clio, 182. "The Ammonians, who possessed the temple of the Theban Jupiter, ten journies from Thebes:" Melpom. 181. "The oracle of Jupiter amongst the Ammonians:" Thalia, 25. "The Ammonians borrowed from Thebes the custom of covering the head of the statue of Jupiter with the skin of a ram's head:" Euterpe, 42. From all which, we should conclude, that the temple or oracle of the Libyan Jupiter, like that of Dodona, resembled the temple of Thebes.

Herodotus and Diodorus assign different reasons for placing the head of a ram on the statues of Jupiter; and for using the representation of the same animal, or a part of it, as the symbol of the DEITY.

tians were the first who introduced the sacred festivals, processions, and supplications; and from them the Greeks were instructed. Of this, it is to me a sufficient testimony, that these religious ceremonies are in *Greece* but of modern date, whereas in *Egypt* they have been in use from the remotest antiquity." Euterpe, 58.

Herodotus himself was a believer in divination; or feigned to be such. See his declaration, in *Urania*, 77; and the account of *Melampus*, in *Euterpe*, 49.

Herodotus says, Euterpe, 42, that "before Jupiter shewed himself to Hercules, he covered his head with the skin taken from the head of a ram : and hence (says he) the Thebans abstained from eating of sheep ; esteeming the ram as sacred, and only killing one on the annual festival of Jupiter, in order to place the skin on the image of the god." But Diodorus says, lib. iii. 4. that it was done, because *king Ammon* wore a helmet in the shape of a ram's head. These possibly may have been stories invented, with a view to satisfy the vulgar, after the true reason had been long forgotten. We are aware that the symbol of the ram has been referred to the sign Aries, or the commencement of the year : but to believe this, we must first forget, that we trace more of vulgar prejudice and superstition, than of philosophical and scientific reasoning, in the rites of most of the popular religions that have existed in the world, and do still exist. The fact most probably is, that after the customs and ceremonies had been long in use, men of learning and ingenuity found out analogies that never existed ; and thus formed a system. For mankind begin with experiments, and systems are formed afterwards ; and then, forgetting by what gradual steps they proceeded, they are fond of believing that they began with a system ; as that idea flatters their pride, more than the other.

The ancients speak of FOUR temples in or about Thebes : of which, the one whose remains have been described by Pococke, Norden, and others, is universally referred to Jupiter : and, in effect, the city of

Thebes itself was named *Diospolis* by the Greeks, from its being considered as the city of Jupiter. Strabo, who had himself visited Thebes, (see page 816), speaks of a temple of Jupiter there ⁴.

It appears that amongst the remains of *two* of these temples, there are found certain parts or members, which bear a resemblance to the edifice discovered by Mr. Browne; and one of them, in particular, bears a most striking resemblance to it. It may be proper to remark here, that we speak not only from the brief description in Mr. Browne's book, but also from a drawing exhibited some years ago in this country, as a copy of that, which this gentleman drew from memory, after he had left the place; for the history of his reception and treatment at Seewa, plainly prove that it was unsafe to attempt to draw a view of the building on the spot.

We mean to speak only of the *inner* temples, or *sanctuaries*, of the Egyptian temples, since those structures, taken at large, are quite out of the question, in respect of any similitude to the building at Seewa.

⁴ Since we learn from Herodotus himself, Euterpe, 3, that he had visited Thebes, (as well as Heliopolis) it is exceedingly difficult to account for his silence respecting its *stupendous* remains, and the history of its kings. Could the same person who entered so far into the history and description of the Pyramids of Memphis, have viewed the remains of the temples, and the sepulchres of the kings, at Thebes, without being so deeply impressed, as at least, to speak of them!

It may also be remarked, that he says nothing concerning the buildings at *Persepolis*, or at *Pasagarda*; but then it is not pretended that he visited these places.

Within the body of the great temple at Thebes, is a room of *granite*, supposed by Pococke and others, with some reason, to be the inner temple or sanctuary mentioned by Strabo⁵. Pococke also, as well as Lucas, saw a building, similar to it, in a ruined temple at *Armant*, which is the ancient *Hermonthis*, situated in the environs of Thebes; and where there was also, as we are told by Strabo, page 816, a temple of Jupiter. This building was surrounded by the ruins of a larger temple; and appears to have been placed much in the same relative situation within it, as that of Thebes to its temple. The edifice seen by Mr. Browne (or rather the remains of it, as one of the end walls was in

⁵ This is Strabo's brief description of the Egyptian temples; p. 805.

"At the first entrance is a court or avenue, paved with stone, about 100 feet wide and 3 or 400 feet long; sometimes more: this is called the *Dromos*. On each side are sphynxes, in two rows, about 30 feet asunder. After this, is one, or more, vestibules. After that is the temple, which consists of a large court or ante-temple, and an *innermost* temple, which is not very large, and in which there is no sculpture; or at least, if there is, it is of some beast, but never of the human figure. At the farther end of the ante-temple are a sort of wings, of the height of the temple; and the walls as far distant from each other, as the breadth of the foundations of the walls of the temple: and are so built, as to *incline towards each other*"—(Here the original appears to be corrupted.—If it meant that the walls approached each other, on the ground-plan, that is contradicted by the remains of the temples at Thebes and Hermonthis: and no other kind of inclination can well be conceived.) He concludes by saying that "on these walls, very large figures are cut, much like the *Etruscan* and *Grecian* works."

ruins), was indeed of smaller dimensions than the others, in respect of length, although in breadth and height, not very different. But the points of direct resemblance between those of Hermonthis and Seewa, are in the roofs; which in both, consisted of vast blocks of stone laid across the vacant space from wall to wall: and in the walls and soffits being covered with emblematical figures and hieroglyphics.

From the description of the temple at Seewa, in the note, its general resemblance to the Egyptian style of building, as found in Pococke, Norden, &c. must strike every one: but the descriptions of the temple at Armant, from Dr. Pococke and P. Lucas, which are also subjoined, will place the matter in a yet clearer point of view⁶. We propose also to

⁶ Mr. Browne's description of the edifice at Seewa, pages 19 and 20.

"It was a single apartment, built of massy stones, of the same kind as those of which the pyramids consist, and covered originally with six large and solid blocks, that reach from one wall to the other. The length I found thirty-two feet in the clear; the height about eighteen, the width fifteen. A gate, situated at one extremity, forms the principal entrance; and two doors, also near that extremity, open opposite to each other. The other end is quite ruinous; but judging from circumstances, it may be imagined that the building has never been much larger than it now is. There is no appearance of any other edifice having been attached to it, and the less so as there are remains of sculpture on the exterior of the walls. In the interior are three rows of emblematical figures, apparently designed to represent a procession: and the space between them is filled with hieroglyphic characters, properly so called. The soffit is also adorned in the same manner, but one of the stones which formed it is fallen within, and breaks the connection. The other five remain

enter more at large into the descriptions of the inner temples of the Upper Egypt, as well as into a more detailed comparison, between the temple of Hermonthis, and the remains of that at Seewa.

entire. The sculpture is sufficiently distinguishable ; and even the colours in some places remain."

P. Lucas's description of the inner temple at Hermonthis,
Vol. ii. p. 120.

" The *choir* of the temple is still entire ; such as it is seen in the drawing. It is filled within and without, with figures, in which may be recognised the ancient divinities of Egypt. At the end of this choir is a little *sacristy*, where are discovered some bas-reliefs, which seem the work of a skilful hand, and which are so well preserved, that they appear as if just made. This chapel, or this sacristy, whichever name one chooses to give it, is covered with five stones, each twenty feet long, five wide, and two feet eight inches in thickness : supposing them all to be equal to that which I measured."

Dr. Pococke, Vol. i. p. 110.

" The ante-temple is very much destroyed ; the inclosure round it, and the temple itself, are very particular, but little remains except the foundations. The *inner* temple is entire ; there are stairs up to the top, through the wall, which is about 25 feet high : it is adorned with hieroglyphicks within and without. On the outside are four stories of hieroglyphicks of men, but only three appear within. In the ceiling of the first room there are five hawks with spread wings : in the second room seven, and two *rams* face to face : the rest of the ceiling is adorned with stars, and on each side are some small hieroglyphicks with human bodies, and the heads of a great variety of beasts," &c.

It is well known that the Egyptians formed the roofs of their public buildings entirely of stone ; that is, of long blocks laid across the open spaces in the nature of *beams*, and then laying shorter ones across them to fill up the remainder of the vacant space. This was the ordinary mode ; but in some cases (as in that of Armant, &c.) the roofs were formed entirely of vast blocks, lying parallel to each other.

The Egyptian mode of roofing, induced, no doubt, the necessity of placing so many columns in the interior of their grand edifices. Want of timber gave birth to this system of architecture, which the plenty and choice of good stone enabled them to pursue : and to this state of things we owe the massive style, and consequent duration of their vast piles of building ; unequalled throughout the world, in bulk, solidity, and length of existence !

Dr. Pococke enters at large into the nature of their roofing. He says, p. 215, that the stones employed in this way, as beams, are about 14 feet long, 3 wide, and as many deep⁷. This must be regarded as the ordinary practice : but this was nothing in comparison of the vast masses of stone, which the Egyptians were in the habit of using. Dr. Pococke says, page 61, that “ the whole building (of the *Labyrinth*) was covered with stone ; doubtless laid on the massy pillars that were in it.” And also,

⁷ Diodorus describes much the same kind of roofing, in the sepulchre of Osmandyas. (Lib. i. c. 4.) The stones, he says, were 8 cubits, say 13 or more feet, in length ; and the ceiling *azure*, bespangled with *stars*. These stars are noticed by Pococke, at Armant ; and by Mr. Browne at another place.

page 63, that the four rooms in the building taken for the temple of the Labyrinth, the largest of which has a compass of 25 feet, "are covered with large stones of such a length as to be laid from wall to wall." The great temple at *Tentyra*, by the plan at page 86, requires blocks of 40 feet in some parts of it. The inner temple at Thebes, which had a span of 19 feet only, might require blocks of 22: and as P. Lucas says of the edifice at Armant, that it is covered with blocks of 20 (French) feet in length, 5 wide, and 3 deep, we have here an example, in the very environs of Thebes, that stones of these dimensions were used in roofs.

But Dr. Pococke has not said how the roof of *this* edifice was constructed, although he describes its sculptured ornaments. It is Lucas alone, who has given us the important information, which is even more satisfactory, from his not having seen the remains at Thebes^s. He has given a coarse drawing of it, (in vol. ii. p. 119, of his *Third Voyage*;) and which has a great resemblance to that of the temple at Seewa.

This, as we have already seen, is also covered with blocks of stone; which, as the building itself is 15 feet in breadth, and as they also form a kind of *corniche* without, to which is to be added also, the thickness of the walls, they cannot well be less than 21 feet in length. They are described to be five in width, and three in depth; corresponding almost exactly to those at Armant; but as this latter was

^s He was prevented by illness.

covered with five blocks only, so that of Seewa had six. Not that the number of stones is decisive of the length of the building at Armant; for by Dr. Pococke's plan, at page 110, it appears that it is only the large room in the middle, which *requires* blocks of that length; the whole structure being divided into three rooms, of which, the smaller ones at the ends, being mere closets, or slips, might have the stones that formed their roofs, laid in the direction of the *length* of the building. For, as the principal room occupied 26 feet of the whole length of the edifice, which was 46 only, it is obvious that the end rooms must have been very narrow.

These *inner* temples or *sanctuaries*, at Thebes and Hermonthis, have certain points of similitude to each other, in their individual proportions, which seems to be the effect of design, although their bulk bears no kind of proportion to those of their respective including temples. First, the inner temple at Thebes, which Dr. Pococke calls "the small granite room," is about 60 feet long, by 19 wide, and 20 in height⁹, *within*; divided in its length into two equal apartments of somewhat less than 30 each. That of Armant is 46 by 16, and 22 in height¹. So that the proportions of these two, are about *three to one*, of the length to the breadth; whilst that at Seewa, as it *now appears*, has a proportion of about *two to one*. It is not, however, certainly known, whether

⁹ See Dr. Pococke's Plan and Elevation of the Grand Temple at Thebes, at page 92: and the description of the granite room, in page 95.

¹ See the Doctor's plan and description, at page 110 of Vol. i.

it might not have been continued to a greater length, beyond the end that is in ruins; and whether there might not have been a second room, roofed with smaller blocks, which may have been removed, and applied to other uses; although those of the large room may be as useless, as they are unmanageable, to the modern inhabitants of the Oasis. It may even be a question, whether the block, said to be fallen down, was not displaced by the operation of removing the end room, and the wall of separation.

In the next place, the two inner temples of Thebes and Hermonthis, occupy the same relative situations: they both stand *apart* from the greater temples, and within *high walls* adjoining to them; according to the description of Strabo, p. 805².

Again, both are built of *granite*³; the most *precious* material for building, in that quarter, from the excessive cost of the workmanship; whence may be inferred the important or sacred use to which they were appropriated. Dr. Pococke is of opinion, that it was the residence of the beautiful and noble virgin, who devoted herself to Jupiter. Strabo, page 816.

Respecting the ornaments of the *inner* temple at

² See above, page 248. These walls certainly bore no roofing at Thebes. If they had, there would have been no necessity for a *particular* roof to the sanctuary: and we must conceive the same at Armant.

³ This we learn of the one at Thebes, from Pococke; but of that at Armant, from Savary alone. It has been doubted by some, whether Savary ever visited Upper Egypt: however, he may have collected this fact from others.

Thebes, we are left in ignorance, by the persons who have visited it; otherwise than that Dr. Pococke says, that it had a rich *corniche*; of which he gives a drawing at page 219 ⁴. This is much to be regretted, as it leaves no opportunity of comparing so important a part of the design, with those of Armant and Seewa; which, as it may be perceived, have on the whole, a nearer agreement with each other, than those of Armant and Thebes: at least, as far as we are able to make a comparison. Such is the nature of the roofs: both of which, as we have seen, are formed of blocks, of the length of about 21 feet, by $5\frac{1}{2}$ wide, and 3 in depth, indicating nearly an equal breadth between the walls, in both structures, and differing in the length of the part, thus covered by the breadth of one block; for the temple at Armant has only five, that at Seewa, six ⁵.

In the next place, there are precisely the same number of rows of sculptures, on the walls, *within*, in both of these edifices; that is, THREE. That at Armant, has FOUR *without* ⁶: but as to that at Seewa, Mr. Browne seems to have found the sculptures on the outside, too much defaced to enable him to form

⁴ Strabo, in his description of the Egyptian temples, says, that there are no sculptures of *human* figures in the *inner* temples, or *sanctuaries*. But this does not agree with the reports of Pococke and Mr. Browne.

⁵ The blocks at Seewa must have been $5\frac{1}{2}$ English feet broad, in order for six of them to cover a space of 32 feet. The five French feet reported by Lucas, at Armant, would be much about the same.

⁶ Pococke, page 110. Lucas agrees in his drawing, page 119.

any judgment of the particulars. It was reported at Rome, that Mr. Browne thought he discovered two figures with *rams' heads*, which appears highly probable. The materials at Seewa, were not of so durable a nature, as those of Armant and Thebes : and therefore have not preserved the original impressions⁷.

From what has appeared, a doubt can scarcely be entertained that the fabric at Seewa is of Egyptian origin, and of very high antiquity. Nor can it well be doubted, that it had a relation to the worship of Jupiter Ammon, even by those who may doubt its being that famous temple itself. If it be objected that more remains ought to be visible, it can only be answered, that Mr. Browne saw, in the soil around it, indications of the existence of former buildings : and that he also saw some *hewn stones* that were wrought into the walls of the modern houses. Moreover, it may well be said that the transient view alone, that he was allowed to take of the place, generally, will not warrant a decision of the question, whether there be, or be not, in the island, the materials of the edifices described by the ancients⁸.

There is no reason to suppose that the rest of the

⁷ Mr. Browne says, that the stones are " of the same kind as those of which the Pyramids consist." (Page 19.)

⁸ As Mr. Hornemann (who is employed by the African Association) was to proceed from Egypt to Fezzan, with the caravan, his route would naturally lie through Seewa. Probably some new lights may be afforded by him ; especially if he was apprised of Mr. Browne's discovery, whilst he resided in Cairo : which one might expect he would have been.

temple is buried in the sand, because the description of the site allows no ground of supposition that the level has been raised ; the doors appearing to remain of a proper, and of a proportionable height. A mass of sand sufficient to cover the fallen ruins, must have buried a considerable proportion of the sanctuary; admitting it to have been a constituent part of a large temple. No such state of things appears; the room is still 18 feet in height, which is about the proportion it ought to bear to the sanctuary at Thebes, but below that of Armant. But could it for a moment be supposed, that the ruins of a temple were covered with sand, in the middle of the Oasis, what must have been the state of the Oasis itself? Had it been the nature of the place for the sand to collect, as it has done against the sides of the Pyramids, and about the Sphynx, it is probable that no *Oasis* would ever have been formed in that place ; because the vegetation must have been constantly choked up, and covered with sand, as often as it appeared.

It is unquestionable that the worship of Jupiter in Ethiopia, had an establishment of *sacella* or chapels attached to the principal temple in *Meroe* *. And

* Both Herodotus and Pliny, in speaking of Meroe, in *Lower Ethiopia*, describe a temple, or oracle, of Jupiter there. Herodotus says, " the inhabitants pay divine honours to Jupiter and Bacchus only ; but these they worship with the most extreme veneration. At this place, (Meroe) is an oracle of Jupiter, whose declarations, with the most implicit confidence, they permit to regulate all their martial expeditions." Euterpe, 29.

Pliny says, (lib. vi. 29.) " In this city is a temple, in honour

was there any circumstance on which to found a belief of the existence of any other Oasis in the quarter of Seewa, it might perhaps be suspected that the edifice there was a *sacellum* to the larger temple of Ammon. But we trust that the concurrence of so many particulars in the ancient descriptions, with what appears at present, at Seewa, will effectually do away any such supposition. Such is the striking agreement of the geographical positions; together with the attendant circumstance of there being no other place, that answers, in any shape, to the description. To this may be added, the accordance, in point of *form* and *dimensions*, of the Oasis itself: the similarity of productions, and to crown all, the fountain which varied in its temperature at different times.

The discovery of the temple itself, and the circumstances belonging to the Oasis which contain it; together with the operation of fixing its geographical position, to such a degree of exactness as to admit of a comparison with the ancient descriptions; could not, perhaps, have been accomplished, otherwise than by the zeal, perseverance, and skill of an European. Mr. Browne is therefore entitled to great praise, for his spirit of enterprise, which bade defiance to the hardships and dangers consequent on

of Jupiter Ammon; a place of great sanctity and devotion: and around that tract, there are many *sacella*, (or chapels)." The tract meant, is the country between the Abyssinian branch of the Nile, and the river *Tacazze*; usually regarded by the ancients as the *Island of Meroe*; from whence, possibly, the worship of Jupiter descended to Egypt.

an undertaking, similar to that which has been so much celebrated in the history of the Macedonian conqueror : and which was unquestionably performed with much more *personal risk* on the part of our countryman, than on that of Alexander ¹.

It is possible that the remains so often alluded to, may appear to ordinary readers, to be much too insignificant to interest the mind as a remain of antiquity ; and therefore may not answer the expectations formed of the magnitude and grandeur of style of the temple of Jupiter Ammon. To such, it can only be said, that it bears the stamp of Egyptian origin ; and is only pretended, at the utmost, to be a sanctuary of a greater temple, whose materials may probably be found in the form of ordinary habitations, or otherwise, in the Oasis. The dilapidations may have been going on for these 1800 years past : the columns may have been converted into mill-stones, as is the practice in Egypt : or split into convenient sizes for walling ². The part remaining is evidently that which is the least adapted to ordinary occasions ; and which could not, at any rate, be removed with safety ; since the impending blocks of the roof must deter every one from venturing to displace the stones that support them ³.

¹ For the account of the journey of Alexander, see Arrian, lib. iii. ; Diodorus, lib. xvii. c. 5. ; Strabo, page 816 ; and Curtius, lib. iv. c. 7.

² See Volney's Travels, Vol. i. c. 19 ; and Mr. Browne's Travels, page 10. The latter describes a very ingenious mode of dividing the columns.

³ See the Section on ancient Babylon, Vol. I. p. 496, 497.

But even considered as a *ruin*, and independent of its historical importance, the circumstance alone of its having blocks of stone, which approach towards the dimensions of the uprights of Stonehenge, raised in the air to form its roof, is fully sufficient to give it an air of importance and singularity.

These sentiments are entirely the effect of conviction, on the part of the Author, on occasion of the disclosure of Mr. Browne's route to Seewa, in his *Travels*, just published. He had previously adopted a contrary opinion; but it arose from a misconception of the position of Seewa, which was reported to be at a less distance inland, by three journies. He always supposed *Santariah* to be the Oasis of Ammon, and as such it is placed in the Map of North Africa, 1798. It now appears, that Seewa is the same with Santariah: and, of course, his opinion is not changed in respect of the position of Jupiter Ammon⁴.

⁴ Santariah, in the Map of North Africa, 1798, is placed in lat. $29^{\circ} 5'$ long. $25^{\circ} 45'$. We have placed it above, on a revision of the authorities, in lat. $22^{\circ} 9'$, long. $26^{\circ} 5'$.

SECTION XXII.

OF THE TRIBES WHO INHABITED THE COAST AND
COUNTRY OF LIBYA, BETWEEN EGYPT AND CARTHAGE.

Libya possessed by Nomadic Tribes—Adyrmachidæ—Gilligammæ—Island of Platea, the first establishment of the Greeks in Africa—Asbystæ, Auschisæ, and Cabales; neighbours to the Cyrenians—Cyrenaica, or Libya Pentapolis, the great colony of the Greeks—Garden of the Hesperides—Nasamones, the most powerful of the Nomadic Tribes—Seize on the lands of the Psylli—gather the dates of Augela—Accordance of modern with ancient customs, a proof of our Author's veracity—Psylli, charmers of serpents—Garamantes, the people of Fezzan, or Phasania—hitherto misplaced by Geographers—Splendour of their capital, arising from the profits of merchandize—Conquered by the Romans—Its carrying trade compared with that of Palmyra—Macæ, or Masæ—River Cinyps—Gindanes recognised in the people of Gadamis—Lotophagi—Observations on different species of LOTUS—Remarks on Herodotus's line of distance through North Africa—Other Tribes along the coast: Machlyes, Ausenses, Maxyes, Zauces, Zygyantes—Honey from the palm tree—Island of Cyranis—Carthaginian Empire, unnoticed by Herodotus—Philenian altars—The conquests of Cambyses terminated at the Hesperides—Hills of salt along the north coast of Africa.

THE knowledge of Herodotus, respecting the geography of the coast of Libya, was extensive, but

not critical. His description, found in Melpomene, and which occupies a large portion of that book, includes the whole coast between Egypt and the Lesser Syrtis; being more than half of the northern border of Africa. It appears at first, as if he meant to give a regular chain of distance, marked at intervals of ten days each, by *hills of salt*, from Egypt to Mount Atlas; but on examination it proves defective, in more than one place. These intervals will be noticed in the course of this dissertation; but as nothing can be deduced from the *whole*, taken as a *series*, we shall not break the thread of our design, by examining it in this place. However, as it will appear that the latter half of the series, or that between the Lesser Syrtis and Mount Atlas, agrees to the actual geography; it may be presumed that the other part was equally, or indeed, better known to Herodotus, though not described; as it seldom happens that the sphere of knowledge increases with the distance.

The people of this coast¹ he represents generally as NOMADES, from Egypt, westward to the lake *Tritonis*, (by which he means the *Lesser Syrtis*, Melpom. 186 :) and the country, says he, is low and sandy. The country farther to the west (*Africa proper*, *Numidia*, &c.) is mountainous and interspersed with wood; and infested by wild beasts, and *serpents* of an *enormous* size²: (191.) Within this

¹ The reader is referred to the Map No. IX, at page 183, for the geography described in this Section.

² The *great serpent* of Regulus was afterwards killed in this

tract, however, the inhabitants are husbandmen, and live in houses : and these regions, notwithstanding the unfavourable circumstances related of them, are by much the finest parts of Northern Africa ; being the ancient provinces of *Mauretania*, *Numidia*, and *Africa proper*, (or Carthage). Mount Atlas is marked by our Author, on the score of its form and elevation : “ at every approach, appearing *round* and *steep* ; and so lofty, that its summit can never be distinguished, by reason of the clouds that envelope it ; whence (says he) it was called a *Pillar of Heaven*.” Melp. 184. He remarks also, that the Greeks borrowed the *Ægis*, with which they decorated the shield (or *shrine*) of Minerva, from the neighbourhood of the lake Tritonis : the name of which *Ægis* was derived from the fringed and dyed goat-skins employed on the occasion. Melp. 189.

In our arrangement of the Libyan provinces, we shall follow, as often as we are able, the order observed by our Author.

Beginning from Egypt, says he, Melp. 168, the Africans are to be enumerated in the following manner³. The first are the *ADYRMACHIDÆ*, whose manners are in every respect *Egyptian* ; but their dress is *African* : they occupied the maritime tract between Egypt and the port of *Pleunos*, or *Plynos*.

quarter. Dr. Shaw had heard of none that were more than three or four yards in length.

³ It has been remarked before, that he excludes Egypt from Africa, in his geographical arrangement. In Euterpe, 65, Egypt is said to be *near* Africa.

Plynos, in Scylax, p. 44⁴, is two days' sail beyond *Apis*; but we suppose this to be a mistake, and that it lay near the *Catabathmus Magna*⁵. Scylax confines this tribe, whom he calls a Libyan nation, p. 44, between the points of Canopus and Apis: contrary to Herodotus, who appears to include the sea coast of *Marmarica* within their territory.

In Ptolemy, the Adyrmachidæ are placed in the *inland* tract, opposite to the same coast; and towards Ammon. Schlichthorst says, they were driven into the higher parts of Libya, by the Greeks, in the age following Herodotus. If the former authorities are correct, the Adyrmachidæ must have increased their territories very considerably between the times of Scylax and of Herodotus⁶.

Next to the Adyrmachidæ, says our Author, Melp. 169, were the GILLIGAMMÆ, "who occupied

⁴ See Hudson's *Geog. Min.* Vol. i.

⁵ *Apis* was at the frontier of Egypt towards Libya; situated 12 miles beyond Parætonium; and was named from a temple of Apis there. The Apis spoken of in Euterpe, 18, should be a different place; and as it is connected with *Marea*, may have been adjacent to the lake Mareotis.

⁶ An obscene custom is imputed, by Herodotus, to the *Adyrmachidæ*; such as has also been imputed to the people of a *part of our island*, in barbarous times; we mean a certain privilege claimed by the superior lord, which all the rest of mankind are agreed in reserving for the bridegroom. It is singular, that a custom should have been introduced *here*, which was too barbarous to obtain amongst *more than one* of the African tribes: and that a privilege reserved for the king *alone, there*, should be extended to every superior lord, *here*, in the quarter where the custom prevailed. It is impossible to place the base servility of some of our ancestors in a more striking point of view.

the coast, as far as the island of *Aphrodisias*." Now, as this island was situated *beyond* the port of Cyrene, westward, there must needs be a mistake *here*, because a great part of the fertile and cultivated district of Cyrenaica, would otherwise be allotted to a *Nomadic* tribe. Therefore the facts are irreconcilable, and we must seek for some other explanation. Possibly the island of *Drepanum*, near Derna, might be meant.

The celebrated island of *Platea*, (now *Bomba*) where the Thereans first established themselves, and which continued to be possessed by the Cyrenians, was situated on the coast of the Gilligammæ; as were also the ports of *Menelaus* and *Azyris*. See Melpomene, 152, 166, 169.

The ASBYSTÆ were a small inland tribe, situated between the Gilligammæ on the east, and the Auschisæ on the west, Melp. 170, 171; and *above*, or *within*, Cyrenaica; having no communication with the coast, which was occupied by the Cyrenians. (This seems a proof that the Gilligammæ could not possess any part of the coast to the west of Derna.) The Asbystæ were, beyond all the Africans, remarkable for the use of chariots drawn by four horses: and in most respects they imitated the manners of the Cyrenians'. (170).

Pliny places the Asbystæ, as well as the Masæ or Macæ, to the west of the Nasamones; and of course, is at variance with our Author's description; but

' Herodotus says, that the Greeks themselves borrowed from Africa, the custom of harnessing four horses to a chariot. Melpom. 189.

Strabo, with more probability, says, p. 838, "After the Nasamones, (who are situated at the Greater Syrtis, and beyond Cyrene) are the *Psylli*, *Getuli*, and *Garamantes*."

"The AUSCHICÆ, who bordered on the west of the Asbystæ, extended from *above* Barca, to the neighbourhood of the *Hesperides*, on the sea coast." Melp. 171.

The CABALES⁸, an inconsiderable tribe, occupied the sea coast, opposite to the *centre* of the Auschicæ, and extended themselves to the coast, near *Tauchira*, a town belonging to *Barca*. (171.) They had the same customs with the people beyond Cyrene.

Thus we have filled up the space along the sea coast between Egypt and the Hesperides, situated at the commencement of the Greater Syrtis, and beyond Cyrenaica: concerning which province, we shall presently speak.

It is proper to remark that the distribution of this coast is very different in the Periplus of Scylax, and in Ptolemy, from what we have just given on the authority of Herodotus. Ptolemy lived nearly six centuries after our Author: so that great changes must naturally be expected: but Scylax, doubtless, lived within half a century of the time of Herodotus. As Scylax limits the Adyrmachidæ to *Apis*, on the west, so he extends the *Marmaridæ* from thence, all the way to the Hesperides; including within their territory, the space allotted by Hero-

⁸ Query, if the *Kabyles* of Shaw?

dotus, to the Gilligammæ, Asbystæ, Auschisæ, and Cabales; all of which names he entirely omits⁹. Beyond the Hesperides, the agreement between the two is much closer.

No doubt, we may thus account for the descriptions in Scylax. He must be regarded as a *seaman*; or *pilot*, and the author of a kind of *coasting Directory*, who confines himself to the description of the coasts; giving *general* names to them, as our modern pilots do; as the coast of Barbary, of Guinea, of Malabar, &c. without regarding the lesser political divisions, or the changes that may take place in them: so that it might have happened, and does happen in the cases just mentioned, that many such names are unknown in the countries, to whose coasts they are applied by strangers. In effect, we must regard Scylax as a *pilot*; Herodotus as an *historian* and *geographer*.

The province of CYRENAICA (now Kairoan, or Kurin) was situated *within* the tract of the Nomades: it was the most elevated part of it, and wonderfully fertile. Melp. 199. It contained the first Grecian colony established in Africa: and how interesting it was to the Greeks, may be collected

⁹ Strabo, p. 838, extends the *Marmaridæ* from Cyrenaica to Ammon; which agrees nearly to Ptolemy: whilst Pliny (lib. v. 5.) extends them between Parætonium and the Greater Syrtis.

Diodorus (lib. iii. 3.) divides the Libyans into four tribes, of which the *Marmaridæ* possessed the coast from Egypt to Cyrene: the *Nasamones* on the south, answering to the people of Augela: the *Auschisæ* on the west; and the *Macæ*, the most populous of all, at the Syrtis.

from the detailed history of the establishment, progress, and subjection of it, given to them by Herodotus, in Melpomene, 145, *et seq.*

This province is also named LIBYA PENTAPOLIS, from its having five cities or towns of note in it: that is, *Cyrene, Barce, Ptolemais, Berenice, and Tauchira*; all of which, not only exist at present, under the form either of towns or villages, but it is remarkable that their names are scarcely changed from what we may suppose the pronunciation to have been amongst the Greeks¹.

According to the description of its boundaries by Herodotus, Cyrenaica *proper* could not have had a greater extent along the coast than about 120 G. miles, from east to west. But it was subsequently extended, so as to include the country of the Nasamones, as appears by the famous boundary of the *Philenian* altars, between the states of Cyrene and Carthage².

The gardens, or orchards, of the HESPERIDES, and the history belonging to them, are too well known to be repeated here. It is, however, satisfactory to know, that the ancients fixed on a spot that was appropriate; since there was in more modern times a *wood* there, according to the testimony of Edrisi: and it being near the sea on the one hand, and on the edge of the *Desert* of Barca on the other, a wood could hardly have been expected in that situation.

Strabo, 836, places the lake of *Tritonis*, which he

¹ As *Kurin, Barca, Tollamata, Bernic, and Taukera*.

² Concerning these altars, more will be said in the sequel.

says is the same with that of the *Hesperides*, and which receives the river *Ladon*, at *Berenice*. The lake contained an island, in which was a temple of Venus. Pliny also places the *groves* and *gardens* at *Berenice*, at the end of the *Syrtis*: lib. v. c. 5: and Solinus in like manner. Strabo is, however, wrong, in placing the lake Tritonis at the Greater Syrtis, which ought to be at the lesser one, as will be shewn in its place.

The Tritonian lake of Lucan, was also at the *Hesperides*, but it may be a doubt whether he did not confound it with the lake Tritonis at the Lesser Syrtis. He was a very bad geographer.

Bernic is, doubtless, the same with the ancient *Berenice*. It appears from Edrisi, page 93, that there was in his time a *wood* at 4 miles from the sea, in the plain of *Bernic*, at about 40 G. miles to the SW of Barca. From his mentioning the wood, a practice not common with him, one may conclude that it had something remarkable about it; or that trees were not common on that coast.

Scylax, p. 46, says that the gardens or orchards of the *Hesperides*, are situated at 620 stadia, say 50 G. miles from the port of *Barce*, which is itself 500 stadia, or about 40 G. miles from the *port* of Cyrene. This agrees precisely to *Bernic*. He allows no more than two stadia for the length and breadth of the garden, which formed a square³. He gives a catalogue of the trees in it, which stood so thick as to

³ The number is probably wrong.

entwine with each other ; and it is worthy of remark, that the *lotus* is amongst them.

The NASAMONES, according to Herodotus, were the most powerful of the Nomadic tribes on this coast⁴. They bordered on the *Greater Syrtis*, and on the district of Cyrene ; and as they had seized on the lands of the *Psylli*, their territory must have embraced the whole of the south and east sides of the *Syrtis*. It appears that they also appropriated to themselves the dates produced in the plains of *Augela* ; whence, the whole extent of their territory may have been about 400 G. miles from east to west, at that time : so that they may well have been denominated the most powerful of the Nomades. But when, in later times, the boundaries of Carthage and Cyrene met at the *Philenian altars*, situated at the innermost recesses of the *Syrtis*, it is evident that the *Nasamones* must have been dispossessed in

⁴ *Melpomene*, 172. In *Euterpe*, 32, he says, " that they inhabited the *Syrtes*, and a tract of land which extends from thence to the east." *Strabo*, 837, places the *Nasamones* at the *Greater Syrtis*, and beyond them the *Psylli*. *Pliny* (v. 5.) says that they were originally named *Mesamones* by the Greeks, as being situated between two quicksands ; meaning perhaps the *two Syrtes*, but this does not apply.

Lucan (lib. ix.) reckons them a barbarous tribe, and says that they live by *wrecks* : the *Syrtes* supplying their wants, and making up for the barrenness of their soil. *Curtius*, iv. 7. also speaks of their making a prey of stranded ships. Our countryman, Mr. Bruce, was shipwrecked there, and found them much the same sort of people. See his *Introduction* ; and also page 131, Vol. I. of this work.

their turn. And accordingly, in Ptolemy, we find them removed to the inland tract of Augela itself: in which Diodorus agrees. Lib. iii. c. 3.

Concerning the geographical position of Augela, both absolutely and relatively, we have already spoken. Its historical importance too, is considerable, as it relates to our Author's history; and it is one of those few places whose name has not undergone a tittle of change since Herodotus wrote⁴. Pliny also speaks of it, lib. v. 4. and 8, and brands the inhabitants with the character of worshipping evil spirits. We have seen that it is also spoken of by the Arabian geographers, and by modern travellers. Abulfeda calls it an *Island* in the Desert, abounding with water and palm trees: and we shall find in the reports of modern travellers, a pleasing confirmation of those of our Historian, as they serve to give a confidence in him, when he relates things of greater importance. "The Nasamones (says he) during the summer season, leave their cattle on the coast, and go up into the country, to a place called Augela, to gather dates; on which spot the palms are equally numerous, large, and fruitful." Melp. 172. Modern travellers inform us, that the dates in the plain of Gegabib, five journies to the eastward of that of Augela, are gathered by the people on the coast of *Derna*; so that one may conceive that the same practice prevails throughout the whole region. See Proceed. Afr. Assoc. 1790, ch. x.

⁴ Much the same has just been said concerning the towns in Cyrenaica.

The territory of the *PSYLLI* is to be regarded as a province of the Nasamonians. Herodotus says that the latter took possession of the lands of the former, in consequence of their being depopulated by an accident. Melp. 173. Pliny, with more appearance of probability, says that the *Psylli* were destroyed, generally, by the Nasamones, lib. vii. 2; and that the small remains of them fled.

The reputation which the *Psylli* bore for charming of serpents, and for the cure of their stings, is mentioned by many ancient authors. Cato is said, by Plutarch, to have carried some of the *Psylli* with him, in his memorable march round the Greater Syrtis; when he, of course, passed through the former country of the *Psylli*, which had the reputation of being dreadfully infested with serpents; and whence, we may suppose, arose the necessity of their learning how to avoid or to subdue them⁵. From this popular idea, we may suppose that certain *jugglers* professed themselves *Psylli*, as we learn from Pliny, lib. vii. 2. They are very often mentioned by this author, as in lib. xxv. 10; and xxviii. 3⁶.

It is certain that in India, a country also abounding with serpents, there are people who so completely subdue serpents of the most venomous kinds, as to have them entirely at command. They are

* — Well in the land of serpents were they plac'd:
Truce with the dreadful tyrant, Death, they have,
And border safely on his realm, the grave.

Rowe's *Lucan*, lib. ix.

⁶ See also Savary, Vol. i. ch. iv.

said to seize on them, with their naked hands, without apprehension of mischief: and this, not only on those they have already been accustomed to, but on such as they never saw before. They teach them to *dance* to a wind-instrument, generally three at a time; and this the Author has often seen; as well as the replacing them in their baskets, which the juggler does with the same indifference as if they were eels. But in what state their powers of stinging *then* were, the Author knows not.

The Psylli were placed between the Nasamones, Macæ, and Garamantes; (Melp. 173, 174, 175); that is, at the middle part of the Greater Syrtis; now the Desert of Sort.

Scylax omits the Psylli altogether.

Beyond these, southward, that is, towards the inland country of Africa, were the GARAMANTES, said by Herodotus to be "a numerous nation, situated at 10 journies from Augela," (*i. e. westward*, of course), and "between the Nasamones and the Macæ." (See Melpom. 174, 175, 183.) The present towns of Mesurata and Lebida are situated within the territory of the ancient *Macæ*, or *Masæ*.

The Garamantes will be clearly made out to be the people of FEZZAN, a considerable tract of inland country, situated midway between Tunis and Egypt; and which, notwithstanding its great extent, falls under the description of one of the Oases, or fertile tracts, found in the middle of the desert; being completely insulated by sandy or rocky deserts, and separated to a considerable distance from any other

habitable tract. It may, indeed, be reckoned the largest Oasis known⁷.

Herodotus supposes that the eastern limit of the Garamantes approached within 10 journies⁸ of the Augelæ; but this can only be true of the *approximating parts* of the two provinces; between which lies a frightful and widely extended desert, part of which is sandy, partly *naked* rocks⁹. The extent of the country of *Garama* is also omitted by Herodotus; but this does not invalidate the remaining facts; and, in our idea, few geographical positions can with more certainty be reconciled to ancient history; for it will appear that Strabo places the Garamantes in the quarter of Fezzan, by *positive data*, and Pliny, by the strongest implication possible; that is, by assigning to the Garamantes certain cities, whose remains are amongst the Fezzaners.

It is true that both Ptolemy and M. D'Anville place the Garamantes nearly in the *centre* of Africa¹;

⁷ Strabo places the Psylli between the Nasamones and the Garamantes; which latter agrees to Fezzan.

⁸ Pliny, lib. v. 4, says 12 journies.

⁹ See African Assoc. 1790, ch. x. Pliny speaks of burning rocks, &c.

¹ M. D'Anville places *Germa* so far inland as 24° 15', although it be really in 27° 48'; since it is no more than 17½ caravan journies from Mesurata. See above, p. 209. Moreover, he extends the Garamantes within the limits of Begarmee, which, it is possible, he might mean for Garamanta.

Some of the ancients seem to have been much puzzled about the situation of the Garamantes: and as Ptolemy places them

and that Pliny supposed, when he spoke of the people of *Phazania*, and of the *Garamantes*, and *Gamphasantes*, that he was describing different nations; but the contrary is however true. See lib. v. c. 4, 5, and 8. Mela also calls them *Gamphasantes*, lib. viii. Pliny describes the conquest of *Phazania*, and other tracts in Africa, by Balbus, lib. v. c. 5, and says, that it had a *fine* capital city named *Garama*; as also another city named *Cillaba*: (c. 4.) *Garama* was no doubt the *Germa*, or *Jerma*, a ruined city, well known to the present people of Fezzan; and *Cillaba* may be taken for *Zuela*, or *Zawila* (also in ruins²) which afterwards became the capital, and existed as such in the time of Abulfeda. Tab. III. Africa.

It can hardly be doubted but that *Germa*, or *Garama*, the *capital*, gave name to the *country* itself, amongst the Greeks and Romans. Abulfeda calls it *Karran* or *Garran*, as well as *Fazzan*; and Edrisi, p. 39 and 40, *Faran*. But all kind of doubt is removed concerning the place meant: for Abulfeda describes it to be on the *east* of *Gadxamis*, (*Gadamis*, the *Cydamus* of Pliny,) and of *Wadan*; and

towards the centre of Africa, so Lucan places them on the sea coast.

Dr. Shaw observes, p. 136, that "the *Garamantes* may be presumed to have been placed either in the districts of *Gadamis*, *Fezzan*, or some of the other more distant cities and villages of the kingdom of *Tripoly*;" which proves that the Doctor had considered the subject well, although he does not come directly to the point.

² African Association, 1790, ch. iv.

to be an island, or Oasis, in the great Desert of Sahara, well watered, and fruitful in palms; and having cities and other edifices. Moreover, he places its *then* capital, *Zawila*³, on the *south* of *Sort*; whose position has already been assigned at one of the recesses of the Greater Syrtis. See page 210⁴.

According to the information collected by the African Association, Germa is situated at four journies to the ESE of Mourzouk, and is also 25, of Edrisi's scale, from Agadez, (pages 39 and 40): so that there is little doubt of its being the Garama of Pliny.

We shall add to these authorities some ideas of Strabo and Pliny; and although neither of them appear to be well informed on the subject, yet their ideas coincide as far as they respectively go.

Strabo says, p. 835, that "above the Getulians is the region of *Garamanta*, 9 or 10 journies distant from the sea coast (perhaps the capital may be the *point* reckoned to), and the same distance from the Ethiopians: and also 15 from the Ammonians." And, 838, "after the Nasamones (who are situated near the Syrtis and Cyrenaica) are the Psylli; a part of the Getulæ, and the Garamantes," &c. This proves clearly that Fezzan is intended by the region of Garamanta, by its distance from the sea, and from the Ethiopians. Augela was unknown to Strabo; and we may suppose that he included the space occupied by the Augelæ, in the region of the Ammonians: in which case the 15 days will not be much

³ *Mourzouk* is the present capital.

⁴ See also Abulfeda, Tab. III. Africa.

out. And with respect to its distance from the sea coast, the report is just.

Pliny, lib. v. c. 8, says, there is nothing but a *desert* between the people bordering on the ocean, and the Garamantes, Augelæ, &c., meaning the Sahara, which fills the vast space between the Atlantic and Fezzan; and lib. v. c. 4, he says, that the Garamantes are 12 days from Augelæ. Had Garama been where Ptolemy and M. D'Anville place it, there would have been the countries of Tombuctoo, Agadez, and Kasseena, (or Kashnah) between it and the ocean.

In effect, it seems impossible to mistake it; for Fezzan is the only large tract of fertile land that contains a number of cities and towns in this quarter of Africa: and Garama was deemed of importance enough by the Romans, to induce them to send an army under *Balbus*⁵ to reduce it. Pliny gives a long list of provinces and towns conquered by this general, the names and representations of which he carried in his triumph on that occasion. But besides Fezzan, and its *principal* cities, we can only recognise *Cydamus* (*Gadamis*), on the NW; and *Tabidium* (*Taboo*), on the SW of Fezzan. It is probable that most of the other towns were situated within the Oases or territories of Fezzan and Gadamis: the remainder in the line towards Agadez and Kasseena: for Pliny also says, that “the Romans

⁵ BALBUS was a Spaniard, and a citizen of *Cadiz*; and is said by Pliny to have been the first foreigner who had the privilege of a triumphal chariot. Pliny, v. 5.

possessed the country, even to the river Niger, which separates Africa from Ethiopia⁶." Garama, or Fezzan, appears to have been regarded as of the first importance amongst the conquests of Balbus.

Herodotus was informed that the Garamantes avoided all communication with mankind, and were ignorant of the use of military weapons, but this is doubtless a mistake; although Pliny says the same of the *Gamphasantes*, not recognising them in the people of *Phazania*, whom he had before described.

This character of the ancient people of Fezzan, implying a total seclusion from the rest of mankind, and which their situation in a great island of the Desert might seem calculated to produce; yet differs so widely from the present character of the Fezzaners, that we cannot admit the truth of it. For their present character, which is that of the most enterprising merchants of Africa, appears to grow out of the physical situation of their country: it being, perhaps, the most advantageously placed of any inland country in Africa for the purposes of commerce; being not only situated on the line of the *shortest* and most *convenient*, and therefore *principal* communication between the Mediterranean sea and the centre of Africa, but also in the line between Western Africa, Egypt, and Arabia. It may be compared to the ancient state of Palmyra, placed in the midst of deserts, and forming a *link* of connection between other states; and growing rich by a *carrying trade* across the Deserts. It is probable,

⁶ Pliny, v. 4.

therefore, that they have, in all ages, availed themselves of these advantages, and have not, at least, been *lower* in estimation than their neighbours. Besides, to what must they have been indebted for their *fine capital*, mentioned by Pliny, but to superior riches? Are ornamented cities found amongst such a people as Herodotus describes? It is true that the establishment of a *new* superstition at Mecca, in latter times, may have *added* to the riches of Fezzan, since it is become the rendezvous of the Mahomedan pilgrims from the west and south of Africa⁷: but this circumstance has probably made only a part of the difference that is observable between the state of prosperity existing in Fezzan, and that of their neighbours.

This state of things may be collected from the late Mr. Beaufoy's publication, entitled, "Proceedings of the African Association," 1790, chap. iv. Fezzan is there described to be a circular domain, apparently 14 to 15 journies in diameter, and surrounded on all sides by hilly deserts, except on the western border, on which the flat sandy desert, or Sahara, terminates. To these barriers, more than to military strength, it is, no doubt, indebted for its security: but it possesses military strength likewise, as appears by the expedition against the *Tibesti* mountaineers, described in the same book⁸.

⁷ See Proceedings of the African Association, 1790, chapters iv. and x.

⁸ Pliny says, lib. v. 5, that the Romans found a road over the mountains, into *Garama*, nearer by four journies than the one

No rain falls in Fezzan : but, notwithstanding, water is found every where, in wells 8 or 10 feet deep ⁹. Herodotus appears to be accurate, when he says that in this region (of which Fezzan formed a part) it never rains : he adds, that the houses, some of which are built of indurated salt, are as durable as those of the ordinary materials elsewhere. Melp. 185. Mr. Beaufoy says, that the country " produces a sufficiency of salt for the consumption of its own inhabitants ;" with a variety of useful animals ; a rich vegetation, and great plenty (with some variety also) of grains ¹.

The capital, Mourzouk, oftentimes called Fezzan, is situated nearly in the centre of the country, and at about 262 miles southward from Mesurata, as has already been shewn in page 209 ; Wadan, a smaller Oasis, lying nearly midway between them.

they had formerly used. This short way was probably by Sockna. (See the Map at p. 183.)

⁹ Mr. Beaufoy accounts satisfactorily for this, from its being surrounded by higher lands. Pliny says, lib. v. 5, of the *Hammamentes*, (who are the *Amantes* of *Solinus*, and whom we take for the people of *Gadamis*, or *Cydamus*,) that they get water at the depth of a cubit and half. It may be from a like cause ; being an Oasis like Fezzan.

¹ There is a river of some bulk in Fezzan, which takes its course by Zuela, &c. Edrisi, p. 40 ; but it appears to be afterwards lost in the sands, and does not reach the sea. Ptolemy continues this river to the sea coast, making it the head of the *Cinyps*, whose course is very confined indeed.

The Tabuda, or Taboo River, is in like manner represented by Ptolemy as the upper part of the *Bagrada*, or river of Carthage : an error of still greater magnitude.

The city of Zawila², and that of Germa³, are situated to the eastward, and ESE of Mourzouk. Each of them contains the ruins of edifices, of which "there are no existing patterns in use" at this time; (Germa, in particular): and which can only be referred to the period of the Roman dominion there⁴.

It may be conceived that the Nasamonian explorers before-mentioned, (see page 32) would naturally take their route through the country of Fezzan, to the Niger. For "they first proceeded through the inhabited region; then came to that, which was infested by wild beasts; which, also leaving, they directed their course westward, through

² Called also Zuela. It must not be mistaken for *Zala*: which is 10 days to the eastward of it. Ed. p. 40.

³ It is *Jerma* in Beaufoy (p. 130,) and *P. Lucas*; but *Germa* in Edrisi, p. 39.

⁴ Abulfeda is silent concerning any ruins at *Zawila* and *Germa*; although he speaks of some very celebrated remains of *Roman* buildings at *Gadamis*, Tab. iii. Africa. The report of the ruins at Germa, &c. is from European travellers.

Mr. Beaufoy says, (Afr. Assoc. 1790, ch. iv.) "Zúeela,—in which the remnants of ancient buildings, the number and size of the cisterns*, and the construction of the vaulted caves, intended perhaps as repositories for corn, exhibit such vestiges of ancient splendour, as will probably attract, and may highly reward, the attention of the future traveller."

Again, of *Germah*, or *Jermah*—"distinguished by numerous and majestic ruins, that exhibit to the ignorant inhabitants of its clay-built cottages, *inscriptions*, of which they know not the meaning, and vestiges of greatness to which they are perfectly indifferent."

* We may ask, why *cisterns*, in a country where water is to be had at 8 or 10 feet depth?

the Desert," &c. Euterpe, 32. Fezzan would, of course, be *that* inhabited country; and westward of it lies the great sandy Desert, beyond which was the Niger, (or *Nile* of the *Negroes*) a part of whose course appears to approach within little more than 35 caravan journies of the borders of Fezzan.

Returning to the coast—we find the MACÆ (of Herodotus, Melp. 175,) in possession of it, to the westward of the Nasamones; or rather of the *Psylli*, whose districts became a part of the other, and was the part which bordered on the Macæ.

Pliny confirms this situation, generally, by placing the *Masæ* (as he writes the name⁵) on the west of the Nasamones. Scylax says, p. 47, that the Macæ wintered adjacent to the coast of the Syrtis, (and beyond the Nasamones⁶, who inhabited the innermost part of it; but in summer, on the deficiency of water, retired into the higher parts of the country. (Ptolemy places the *Macæ Syrtitæ* much in this position.)

According to the ideas of Herodotus, the Macæ ought to extend westward to the neighbourhood of the present Tripoly. For he says, that their territory included the course of the river *Cinyps*, which flowed from a *woody hill* named from the *Graces*, at 200 stadia inland from the coast. Melp. 175. Pliny, lib. v. 4, mentions a *district* of the name of Cinyps. Ptolemy, who certainly is oftener right

⁵ It may be supposed from Pliny's writing the name *Masæ*, that the *c* was to be sounded *soft*. *Mesurata*, which is situated within this tract, may have been formed from *Masa*.

⁶ In this place, the lands of the *Psylli* are included with the other.

in what relates to the *detail* of *this* coast of Africa, than any other person, places the mouth of the Cinyps at no great distance to the eastward of *Leptis Magna*; now Lebida. He says, that this city is also called *Neapolis*; in which Strabo agrees; p. 835. And as Scylax, p. 47, places the same river near Neapolis, we must suppose that the Cinyps gained the sea near Lebida, although we do not find any modern notices concerning it. Mr. Lucas⁷, for instance, does not mention either the *river* or the *hill*, in his account of his journey: and a *fine river*, and a *woody hill*, are objects too remarkable in this quarter of Africa to be passed over unnoticed, where the rest of the country is naked and barren.

Herodotus again mentions the Cinyps, on occasion of the settlement of Dorieus (brother of the immortal LEONIDAS, king of Sparta,) in its vicinity. He styles it "one of the most delightful situations in that part of the world." Terp. 42. Dorieus was afterwards expelled, by the joint efforts of three tribes, amongst whom was the *Maci*; doubtless intended for the *Macæ*, through whose territory the Cinyps ran⁸.

The GINDANES, LOTOPHAGI, and MACHLYES, in the order here mentioned, are said to occupy the remainder of the space between the *Macæ*, and the lake Tritonis; by which latter, Herodotus intended

⁷ African Association, 1790, ch. iii.

⁸ Two remarkable customs are attributed to the *Macæ*, (Melp. 175 :) the one is, "their leaving a tuft of hair in the centre of the head; carefully shaving all the rest;" the other, that in war they shield themselves with the *skins* of *ostriches*.

either the *Lesser* Syrtis, or the Syrtis and lake *collectively*. Of this more in the sequel.

It is not perfectly clear what nation or people, Herodotus intended by the Gindanes, but from very strong circumstances, we conceive those of Gadamis to be meant⁹. In the first place, no other author that we know of, speaks at all of such a people as the Gindanes: and moreover, Scylax, in his *Periplus*, joins the Lotophagi to the Macæ near the city of Neapolis¹, which necessarily excludes the Gindanes from the sea coast. Nor does it at all appear that Herodotus meant to place them on the sea coast: for he by no means keeps to it, in his description, but occasionally diverges inland; as for instance, from the Psylli, on the coast, to the Garamantes, inland; and from these again, to the Macæ, on the coast.

In the next place, Herodotus says, Melp. 177, that the *Peninsula*, or *Promontory*, which advances *from the country of the Gindanes to the sea*, is possessed by the LOTOPHAGI: and these are exactly the relative circumstances of the two countries of Gadamis and of the Lotophagi: or, in other words, that projection of the coast between Tripoly and the gulf of Kabes, or Gabbs.

Gadamis, (the *Gadzames* of Reiske), is a well known city and territory, situated in the road from

⁹ Herodotus attributes a very singular custom to the women of this district; which was, to shew by tokens in their dress, the number of their lovers.

¹ From the description of Scylax, one might suppose *Neapolis* to have stood nearer to the Great Syrtis than *Leptis* is.

Tunis to Agadez and Kasseena. Abulfeda calls the city an illustrious one, and says, that it contains the ruins of some admirable *Roman* structures : that its territory is fertile, and watered by running streams ; and that it is celebrated for preparing of *skins*².

The city of Gadamis, according to Mr. Magra, lies 23 to 24 journies of the caravan, in the direction of S 4° E from Tunis : (Proc. Afr. Association) : and Abulfeda (Tab. Africa), places it at 14 *miles*, (he means journies) directly south from Kabes ; which agrees pretty well. We have allowed 15 miles per day, or 360 from Tunis.

The ruins mentioned by Abulfeda are accounted for, from its having been a Roman establishment, and one of the principal conquests of Balbus : (*Cydamus*, or *Kydamus*.) Pliny, v. 5.

Abulfeda, moreover, says, that the running waters in this province are distributed in *certain proportions* to the cultivator of the soil : we may suppose, from the necessity of husbanding them out, and not suffering them to run to waste³.

To return once more to the coast—it will appear

² The skins prepared at Gadamis, are doubtless either those of goats or sheep, stained with different colours, as in some other parts of Africa : a manufacture which is executed with great skill. Dr. Shaw says, p. 241, that there is a particular species of *sheep* at Gadamis, which are nearly as tall as fallow deer, and with fleeces as coarse and hairy as those of goats (which are also shorn in some parts of Africa). These may, possibly, supply the skins. We shall speak more of this subject under the heads *ÆGIS* and *TRITONIS*.

³ The same is said concerning the river of Kabes.

from what has been said above, that the sea coast between the two Syrtes was divided between the *Macæ* and the *Lotophagi*, the latter of whom also possessed the island of *Menix* (or *Meninx*), now *Jerba* ⁴: and the coast beyond it, as far as the lake and river of Tritonis, to the Machlyes, who touched on the inner part of the Lesser Syrtis. This tribe also is said to have fed on the fruit of the *lotus*; but not so entirely as their neighbours, who were denominated from the use of it. Melpom. 177, 178 ⁵.

Scylax, as we have seen, extends the name of Lotophagi to the tribes generally, between the two Syrtes, p. 47, 48; leaving to the *Macæ* nothing more than the western shore of the *greater* of these gulfs. Ptolemy limits them to the neighbourhood of the river Cinyps alone, whilst Herodotus appears to confine them to the west of that river; or perhaps of the district which is denominated from it. Again,

⁴ See Dr. Shaw, page 197.

⁵ We collect from Strabo, page 835, that the people at the Lesser Syrtis, caught a great deal of fish; for he describes them as being very ingenious and industrious, in fixing their fishing apparatus; the rise and fall of the tide, in that particular part, being peculiarly favourable to it, as we learn from Dr. Shaw, who visited the spot, and observed the same mode of fishing at present. Hence we have an opportunity of finding how accurate Herodotus was, in this quarter: for this is precisely the station of the Machlye tribe, which he describes to inhabit the coasts of the Syrtes, and to use a *less quantity* of the *lotus* than their neighbours, the *proper* Lotophagi, although he gives no reason for it; but which may possibly be found, in their obtaining supplies of fish with greater facility than their neighbours, who border on the open sea.

Strabo, p. 834, places them in the island of Meninx, *alone* ; although he calls the adjoining Syrtis, that of the Lotophagi, implying that they possessed at least a part of its shores ; as was really the case : and Pliny, lib. vi. 7, assigns them, in addition to the island, the *environs* of the Syrtis also. In effect then, it appears, that although the Lotophagi of the Greeks, extended generally along the coast between the two Syrtes, yet that the different tribes of them might use it, only in different degrees ; and it is certain that Herodotus confines the proper Lotophagi to the promontory or projection of the coast, opposite to the Gindanes, (the supposed people of Gadamis) ; in which may be included the aforesaid island of Meninx, or Jerba, which is separated from the coast, by a narrow and shallow channel ; and may possibly have been regarded by Herodotus as a continuation of the main land. If we take the whole extent of the tract thus assigned to the Lotophagi and Machlyes, it may comprehend 200 miles of coast.

But the allotment of this confined space, alone, to the eaters of lotus, was owing to the want of a more extended knowledge of the countries that bordered on the Desert ; for it will be found, that the tribes who inhabit them, and whose habits are in any degree known to us, eat universally of this fruit, in a greater or less degree, according to circumstances : and most of them, apparently, as much as they can obtain of it. The tree or shrub that bears the lotus fruit, is disseminated over the edge of the great Desert, from the coast of Cyrene, round

by Tripoly and Africa *proper*, to the borders of the Atlantic, the Senegal, and the Niger ⁶.

It is well known, that a great difference of opinion has prevailed amongst the moderns, concerning what the ancients intended by the *loros* : for the history of it, as it has come down to us, is evidently mixed with *fable*, from having previously passed through the hands of the poets ; Homer being the first who mentions it (in the *Odyssey*, lib. ix. 94.) ; but he no more expected us to believe that the lotus possessed the quality of inducing *forgetfulness*, than that a race of Cyclops existed, or that men could be transformed into swine ⁷. But of the *existence* of a fruit, which, although growing spontaneously, furnished the popular food of tribes or nations, there is no kind of doubt ; as it is mentioned by various authors of credit ; and amongst the rest by Polybius, who appears to have seen it, in the proper country of the *Lotophagi*.

There appear, however, to have been two distinct species of lotus designed by the term ; because Herodotus and Pliny, in particular, describe a marked difference between them : the one being an aquatic plant, whose root and seeds were eaten, in Egypt ;

⁶ This appears as well from ancient as modern authorities.

⁷ The poetical allusions to the oblivious effect of the lotus, are almost endless. Xenophon also mentions it, in one of his harangues to the Ten Thousand (*Anab.* lib. iii.) Those who eat of the fruit of the lotus, we are told, forgot their *native country* : this may be a poetical allusion to the ease, and (supposed) comfort and happiness of a people, whose country produced food for them, without the labour of raising it.

the other, the fruit of a shrub or small tree, on the sandy coast of Libya. The Egyptians, it seems, did not obtain a nickname from the Greeks, for eating *their* lotus, as certain people of Libya did ; the reason of which seems clearly to be, that it constituted a *part* only of the food of the one, but the entire food of the other. And here it may be remarked, by the bye, that the Greeks appear to have applied the name LOTUS to such vegetable productions as either grew spontaneously, or were raised with very little art or labour ; and which constituted the food of men. We shall first speak of the lotus of Libya : the one generally intended by the ancients.

Herodotus certainly had *not* seen it. In Melpom. 177, he calls it “ the *fruit* of the lotus, which is of the size of the mastick, and sweet like the date ; and of which a kind of *wine* is made.” This circumstance of the wine is mentioned by *all* those who have spoken of the lotus of Libya, and marks the distinction between that and the aquatic lotus. Herodotus, moreover, speaks of “ a species of *thorn*, which resembles the lotus of Cyrene ; and which distils a gum.” Euterpe, 96. This, therefore, should be the *rhamnus lotus*.

Pliny, lib. xiii. c. 17, describes two different kinds of lotus ; the one found at the Syrtis, and amongst the Nasamones, &c. ; the other in Egypt. The former he describes from Cornelius Nepos, to be the fruit of a tree : in size ordinarily as big as a bean, and of a yellow colour, sweet and pleasant to the taste. The fruit was bruised, and made into a kind of paste or dough, and then stored up for food.

Moreover, a kind of wine was made from it, resembling mead ; but which would not keep many days. Pliny adds, that " armies in marching through that part of Africa, have subsisted on the lotus." Perhaps this may refer to the army of Balbus, which, Pliny informs us, lib. v. c. 5, had penetrated to Gadamis and Fezzan.

Polybius, who had himself seen the lotus on the coast of Libya^{*}, says that it is the fruit of a shrub, which is rough and armed with prickles, and in foliage resembles the *rhamnus*. That when ripe it is of the size of a round olive ; has a purple tinge, and contains a hard stone : that it is bruised or pounded, and laid by for use ; and that its flavour approaches to that of *figs or dates*. And finally, that a kind of wine is made from it, by expression, and diluted with water ; that it affords a good beverage, but will not keep more than 10 days. (Polyb. apud Athenæum, lib. xiv. c. 12.)

The lotus has been described by two modern travellers, Dr. Shaw and M. Desfontaines, on the side of the Mediterranean ; and by a third, Mr. Park, towards the Niger and Senegal rivers. Dr. Shaw, it is well known, visited the country about the Lesser Syrtis, on the borders of the proper country of the Lotophagi ; and M. Desfontaines, who resided in the same neighbourhood, did the same, at a much later period. The descriptions given by these gentlemen, agree perfectly amongst themselves, and also

* Polybius was employed by Scipio Africanus the younger, in exploring the coasts of Africa.

with those of the ancients ; as may be seen in Dr. Shaw, p. 226 ; in the *Mem. Acad. Royale*, 1788, page 443, *et seq.* ; and in Mr. Park's highly interesting Book of Travels, p. 99, 100. It seems to be agreed, that it is the fruit of the *rhamnus lotus* of Linnæus⁹.

Dr. Shaw says, that " the fruit is common in these Deserts and other parts of Barbary—is still in great repute, and sold in all the markets all over the

⁹ We here extract Mr. Park's description, as being the most perfect of all.

" They are small farinaceous berries, of a yellow colour and delicious taste. The natives convert them into a sort of bread, by exposing them some days to the sun, and afterwards pounding them gently in a wooden mortar, until the farinaceous part of the berry is separated from the stone. This meal is then mixed with a little water, and formed into cakes ; which, when dried in the sun, resemble in colour and flavour the sweetest gingerbread. The stones are afterwards put into a vessel of water, and shaken about, so as to separate the meal which may still adhere to them : this communicates a sweet and agreeable taste to the water, and with the addition of a little pounded millet, forms a pleasant gruel called *fondi*, which is the common breakfast in many parts of Ludamar, during the months of February and March*. The fruit is collected by spreading a cloth upon the ground, and beating the branches with a stick." P. 99.

Mr. Park adds, p. 100, " An army may very well have been fed with the bread I have tasted, made of the meal of the fruit, as is said by Pliny to have been done in Libya : and as the taste of the bread is sweet and agreeable, it is not likely that the soldiers would complain of it."

* Pliny speaks of their mixing some preparation of the farina of grain with the *lotus*. Possibly this may refer to the *wine*, according to the practice just mentioned by Mr. Park.

southern districts of these kingdoms :” and M. Desfontaines, that “ it is spread over the southern parts of the kingdom of Tunis, on the borders of the Desert, and about the environs of the Lesser Syrtis : that the fruit is sold in the markets, their cattle fed with it, and a *liquor* drawn from it as heretofore :” agreeing pointedly with the description given by Polybius. And, finally, Mr. Park says, “ the lotus is very common in all the kingdoms which I visited ; but is found in the greatest plenty on the sandy soil of *Kaarta*, *Ludamar*, and the northern parts of *Bambarra*, where it is one of the most common shrubs of the country. I had observed the same species at *Gambia*, and had an opportunity to make a drawing of a branch in flower. The leaves of the Desert shrub are, however, much smaller, and more resembling, in that particular, those represented in the engraving given by M. Desfontaines.”

To these accounts may be added that of M. Saugnier, who was shipwrecked on the coast of Africa in 1784, and was carried, in a state of captivity, along the western border of the *Sahara* to Morocco. In the part between the Capes Bojador and Nun, he says, the people with him, “ eat of nothing during the day time (that is, on the way) but a small wild fruit, resembling the *jujube* ; which is to be found every where.” This was about the middle or latter end of March ; but Brisson, who was in like manner carried across the Desert, during the latter part of the summer and autumn, only remarks abundance of prickly shrubs ; probably the same shrub, after the season of fruit. Mr. Park mentions February and

March as the season, on the *south* of the Desert; M. Desfontaines says August and September, to the north of the Desert¹.

We conceive that the nature of the lotus, from whence the ancients denominated the Lotophagi, will appear in future perfectly free from ambiguity, from the clear statement and description given by Mr. Park, compared with those of the ancients².

We come next in order to the *aquatic* lotus.

Herodotus describes two kinds of *lotus*, or *water-lily*, in Egypt, although it will appear, almost to a certainty, that his memory failed him; and that he refers *one* of the kinds, which he had seen elsewhere, to Egypt.

“The water-lily (says he) grows in the inundated lands of Egypt: the seed of the flower, which resembles that of the poppy, they bake, and make into

¹ It is highly probable that the fruit gathered by the Nasamonian explorers of the interior of Africa, mentioned by Herodotus, in Euterpe, 32, was the lotus. “After a journey of many days, over a barren and sandy soil, they at length discerned some trees growing in a plain; these they approached, and seeing fruit upon them, they gathered it.” They had passed the Desert from the side of Fezzan, and were arrived at its southern *border*, and in the land of the lotus: and were immediately after taken prisoners, and carried to the side of the Niger. It would seem that these men were not accustomed to the lotus in their own country; living, probably, too far to the east.

² It is worthy of remark, that the same kind of shrub and fruit, or what is exceedingly like it, grows spontaneously in sandy places in Bengal, where it is called *Byre*. The Author has seen them even on the very bank of the Ganges, in dry situations. The people eat them as we may sloes, or wild berries.

a kind of bread ; they also eat the root of this plant, which is round, of an agreeable flavour, and about the size of an apple. *This* the Egyptians call the *lotus*.—There is a second species which grows in the Nile, and which is not unlike a *rose*. The fruit, which grows *from the bottom of the root*, resembles a wasp's nest : it is found to contain a number of kernels of the size of an olive-stone, which are very grateful, either fresh or dried." Euterpe, 92.

² It may be remarked, that the more carefully we examine the descriptions of those objects of natural history, which the ancients had occasion to mention ; and which, in order to aid their descriptions, they were obliged to compare with other things, to which they had a general resemblance, the more we shall be sensible that they were in the habit of marking the particulars in which they differed. Thus, for instance, Herodotus says, that the second kind of water-lily is like a rose : *but*, says he, *the fruit grows from the bottom of the root*. It is unquestionable that, in this respect, the *nymphæa nelumbo* differs from the *rose* ; for the fruit of that plant grows upon a separate stalk, without having either leaves or branches, and *rises immediately from the root* ; but the fruit of the rose is placed amongst its leaves, at the termination of its branches. From the slight manner in which he mentions this second kind of lily ; and his omitting all mention of

² For the following observations on the aquatic lotus, as well as for some remarks on the subject of the lotus at large, the Author is indebted to a highly distinguished friend, whose name and character have been already commemorated in this work.

its being in use as a kind of *food*, although eaten as a *luxury*, it seems probable that he had met with the plant in some other country, but was mistaken in the fact of its being a native of Egypt. It is also to be remarked, that he does not assert that (like the first kind) it was named *lotus* by the Egyptians.

It has, indeed, been supposed that the Egyptian lotus, of the ancients, is the *nenuphar*, or *nymphæa nelumbo* of Linnæus. This error seems to have originated with Dioscorides; for in describing *Kyamos Aigyptios* (lib. ii. c. 128), he plainly refers to Theophrastus's chapter on *Kyamos* (lib. iv. c. 10), in which, *nymphæa nelumbo* is described with a degree of botanical sagacity, worthy the most enlightened age, under the name of *O. Kyamos*.

Theophrastus says, that his *Kyamos* is found in Syria, in Cilicia, and at Torana in Colchis; but he makes no mention of its being known in Egypt⁴. Dioscorides says, that his *Kyamos Aigyptios* is found in Syria and Cilicia; and adds, that it abounds in Egypt: but no botanical traveller, since his time, has met with *nymphæa nelumbo* in that country. Had it been abundant there, as Dioscorides asserts, Alpinus, who writes very fully on the plants of Egypt, would not have omitted it: nor would Forskål, the botanist, who accompanied Niebuhr, have failed to insert so curious a plant in the catalogue of Egyptian plants, published in his book.

The Bengalese have the *nymphæa nelumbo* in

⁴ Herodotus had visited *Syria* and *Colchis*; and, possibly, *Cilicia* also.

their lakes and inundations ; and its fruit certainly resembles at all points that of the second species of water-lily, described by Herodotus : that is, it has the form of the orbicular wasp's nest ; and contains kernels of the size and shape of a small bean. Amongst the Bramins this plant is held *sacred* ; but the kernels, which are of a better flavour than almonds, are almost universally eaten by the Hindoos.

It may, however, be a question, whether this has always been the case ; and whether, in the lapse of time that has taken place since the days of Pythagoras (who is supposed to have visited India, as well as Chaldea, Persia, and Egypt), a relaxation in discipline may not have occasioned the law to be dispensed with : instances enough of a like kind being to be met with elsewhere. *Kyamos*, in the Greek language, appears to signify not only a *bean*, but also the fruit or bean of the *nymphæa nelumbo*. Is it not probable, then, that the mystery of the famous inhibition of Pythagoras, an enigma of which neither the ancients or the moderns have hitherto been able to give a rational solution, may be discovered in those curious records of Sanscrit erudition, which the meritorious labours of some of our countrymen in India are gradually bringing to light ?

In China, where the *nymphæa nelumbo* grows wild, and is also cultivated in great abundance, the nuts, as well as the roots, are eaten as a *luxury* ; but they do not supply any food to the poorer classes⁵.

⁵ "The roots are sliced, and in the summer served with ice. They are also laid up in salt and vinegar for the winter."—

The *nymphæa lotus* of Linnæus certainly grew in Egypt in abundance; and both the roots and the seeds have been, and probably are still, eaten by the inhabitants. Linnæus, who has given the name of *lotus* to this plant, and to the *ramnus*, which really produces the lotus of *Libya*, may generally be relied on for his acuteness; and he certainly thinks the *nymphæa lotus* was the lotus of the Nile. This plant is described at large in Alpinus's *Dissertatio de Laserpitiis et de Loto*; and a full account is given in that work of the manner in which it is used as food.

Theophrastus also describes this plant under the name of lotus (lib. iv. c. 10, immediately after the *Kyamos*), and describes the manner in which both the seeds and the roots are eaten by the Egyptians. But two circumstances, of no small moment in the present question, are observable in this description: he says that it grew in places where the lands were inundated; and he describes the *root* under a different name from the *plant*.

The inundated places near the Nile, produce at present, abundance of the *eddoes*, or *colocassia*. The root of this plant is the food of a vast number of persons in the West Indies, and part of the East Indies; and in the South Sea Islands: it requires very little labour on the part of the cultivator, and is therefore exactly the kind of plant mentioned by

“The seeds are of a taste more delicate than almonds.”—“The Chinese regard the plant as sacred.”—(Sir George Staunton's *Voyage to China*, Vol. ii. p. 391, quarto edition.)

the Greeks, when they speak of lotus, as a food produced with little or no labour, on the part of the eaters of it.

The colocassia, at all times of the year, abounds with broad green leaves, not wholly different from those of the nymphæa lotus; yet its flowers are very seldom seen; the roots are eaten, as the heads of our cabbages are, before the period of the plant's flowering; and as the colocassia is never propagated by seeds, no one has an interest in making himself acquainted with the flower of the plant, or indeed, to suffer it to grow till it bears one.

May we not suppose, then, that Theophrastus has confounded the *root* of the colocassia, with the *flower* of the nymphæa lotus, and made of them *one* plant; for the root, which he calls *corsium*, is by the description, larger than the root of the nymphæa, but very conformable to that of the colocassia, which Alpinus calls *culcas*? If this is admitted, the mystery of the lotus of Egypt vanishes; and we have the Egyptians of the days of Herodotus supplied, as the people of Otaheite, are now, with an abundant food, provided for them, by nature, with little or no labour.

Several botanical writers have suspected that the colocassia was in reality, the *faba Ægyptia*; but no one has solved the difficulty in this way: it is remarkable, however, that in the beautiful edition of Matthioli's Commentaries on Dioscorides (the most magnificent botanical work that appeared in the 16th century), a figure is given of the *faba Ægyptia*, evidently compiled from description, and not drawn

from nature. In this, the leaves and root clearly belong to the colocassia; the flower resembles the *nymphæa nelumbo*, more than any other; but the seed is entirely the produce of the draughtsman's invention; as it does not seem to have any prototype in nature. Had the compiler of this figure been acquainted with the orbicular wasps' nests of the hot climates, to which Theophrastus compares the fruit of his *Kyamos*, I have no doubt that he would have adopted it; and the figure would then have been tolerably conformable to Theophrastus's description.

After this long dissertation, we return to the subject of the geography of Libya.

Throughout the whole extent, from Egypt to the Lesser Syrtis, no idea of distance is given by Herodotus⁶; but as he appears to know, most perfectly, the arrangement and relative positions of all the different tribes, it may reasonably be concluded that he had some idea of the quantity of space also. But to place this matter in the clearest light to the reader, we shall pursue our Author's account of the distance westward, from the Lotophagi (at the Lesser Syrtis) to Mount Atlas, before we conclude our remarks on the remaining part of his geography of the coast of Africa.

He says, *Melp.* 183, that from the Lotophagi it is a journey of 30 days to a nation (whom he does not name⁷) amongst whom there is a species of oxen

⁶ Save those broken lines between the *Ammonians* and the border of *Fezzan*.

⁷ The thirty journeys fall nearly about *Cartenna*, now *Tennis*, in the western part of *Numidia*.

with a singular kind of horns. Immediately afterwards, the *same* people are called *Garamantes* (183, 184), and are placed at 10 days short of the *Atlantes* (or *Atrantes*^{*};) beyond which, at the distance of 10 other journies, still going westward, is Mount Atlas; making an aggregate of 50 journies. Now as the distance is really *about*, though somewhat more than, 50 journies from the Lotophagi (at the Syrtis, which is the point meant by Herodotus) to Mount Atlas, we may fairly conclude that the name *Garamantes* has been interpolated in this place; and that some other name was originally inserted.

What also seems to prove that the *Atlantes* (or *Atrantes*) at 10 journies from the *Garamantes*, are misplaced, is, that Herodotus says, Melp. 185, "I am able to name all the nations, as *far* as the *Atlantes*; but *beyond* these, I have no knowledge." Now, admitting the *Atlantes* to have occupied a position at 10 journies only, beyond the *Garamantes*, it is evident that he has actually named several nations that ought to have lain beyond them; as the Lotophagi, the Machlyes, and others; besides which, the *Atlantes* are placed so far to the west, as to be at 10 journies only short of Mount Atlas.

We regard the fact of the 50 journies between the Lotophagi and Mount Atlas, as a strong circumstance; as it serves to shew that the length of the Mediterranean sea was generally known to Hero-

^{*} It seems there is a doubt concerning the true reading of this word. Can it be the same with the *Hamamentes* and *Amantes* of Pliny and Solinus?

dotus and the Greeks, at that time : for if the *remote* part was known, it may be at least expected that the *nearer* part was, though not expressed. Indeed it can scarce be doubted that the Phœnicians, Carthaginians, and Greeks, who were in the constant habit of traversing the Mediterranean, long before the time of Herodotus, were well acquainted with the length of that sea. For the distances given by Eratosthenes, along the Mediterranean, at little more than a century after Herodotus, were most probably according to a system established long before ; since Herodotus himself calls it “ the sea frequented by the Greeks⁹.” Again, Scylax, who certainly appears to have written before the time of our Author, sets forth the number of days’ sail from *Canopus* to the *Columns of Hercules* ; and which, at the rate of sailing in those days, agrees very well with the known length of the Mediterranean.

Moreover, our Author’s description of the provinces between Egypt and Cyrenaica, seems equally in proof that he had a knowledge of those parts also : and he could not but know, from the frequency of the communication between Greece and Cyrene, that those countries lay *directly opposite* to each other ; which circumstance ought to have pointed out the extent of space between Egypt and Cyrene, as well as between Greece and Egypt.

Proceeding with the history of the tribes, along the coast of the Mediterranean sea, Herodotus

⁹ See the dissertation on the ancient itinerary stade, page 17, Vol. I. of this work.

further says, (178 and 180) that the *Auses*, or *Ausenses*, border on the *west* of the lake and river of *Tritonis*, being separated *by them*, from the *Ma-chlyes*, who border on the opposite side ; and amongst whom, according to *Scylax*, we should look for the temple of *Minerva Tritonia* ¹.

Here it is proper to be observed, that Herodotus differs from his own account, in another place, in his report concerning the occupation of the *Ausenses* ; for in 191, he makes them the *last* of the Nomadic tribes, in going westward ; the nation beyond them (that is, the *Maxyes*) being the *first* of the husbandmen, in the same order of situation. But in 186 and 187, he says, that from Egypt to the lake *Tritonis*, the *Africans* lead a pastoral life, but beyond (that is, to the *west*) of the same lake, they are *not shepherds*, and are distinguished by different manners : that is, as he explains himself in 191, they “ cultivate the earth, and live in houses.” Now, as the *Ausenses* are pointedly placed on the west of the lake, there is of course a contradiction. It is possible that he might mean to speak *generally* in one place, and *particularly*, in the other ; and, in consequence, that the lake was entirely *surrounded* by *Nomadic* tribes. *Scylax* tells us (49.) that the lake *Tritonis* is surrounded by *Libyan* nations, but that there are cities on the western side, (and it is implied *there alone* :) and that, in the same situation, the country is fertile and plentiful. Dr. Shaw seems to describe much the same state of things.

¹ More will be said on this subject, as well as concerning the lake and river of *Tritonis*, in the succeeding Section.

Of the name *Ausenses*, we find no traces in modern geography. Of the *Machlyes* and *Maxyes*, we meet with several names that have some similarity. The *Machryes* of Ptolemy occupy the space between *Gephes* (perhaps the *Gaffsa* of Shaw)² and *Jovis Mons*: i. e. a mountain to the NNE. of the lake *Tritonis*. His *Machyni* are placed towards the gulf of *Adrumentum*. These may possibly be meant for the *Machlyes* and *Maxyes* of Herodotus: and considering the long interval of time between him and Ptolemy (600 years) the tribes may have altered their position. The *Machres* of Leo, and *Maharess* of Dr. Shaw, (196.) at the northern part of the Lesser Syrtis, certainly agree to the supposed position of a part of the *Maxyes*³.

Next to the *Maxyes* were the *Zaueces*, or *Zaveces*, who are marked by the very peculiar custom of having their chariots of war guided by their women. Melp. 123. There are no traces of this name in modern geography, as far as we can learn. We must suppose them to have occupied the space between the Lesser Syrtis and the Gulf of *Adrumentum*, since the *Zygantes*, or *Zugantes*, were the next beyond them, Melp. 194: and these are clearly

² Dr. Shaw does not appear to have been always fortunate in referring the ancient names and positions, to the modern ones. For instance, *Gaffsa* is more like the *Gephes* of Ptolemy, in name and situation, than *Capsa*; *Kisser* to *Gisira*, than to *Assurus*; *Hyra* to *Audira*, than *Thunundronum*. In *Zeleefta*, we have too, the *Zalapa* of Ptolemy, probably.

³ Pliny only says of the *Machlyes*, that they lie beyond the *Nasamones*: lib. vii. 2.

the *Zeugitanians* of Pliny, being the inhabitants of the province which contained the city of Carthage; and whose boundary began on the west, at the river *Tusca*, where *Numidia* ended ⁴. How far this province extended, southward, we know not: and of course we must remain in ignorance concerning the position of the *Zaueces*.

Of the *Zygantes*, our Author says, "that a great deal of honey is found amongst them, the *produce of their bees*; but of this, they say, a great deal more is *made* by the natives. They all stain their bodies with vermilion, and feed upon monkies, with which animal their mountains abound." *Melp.* 194.

The circumstance of the honey is well explained by Dr. Shaw, in his account of the countries of Algiers and Tunis, as it is there made occasionally from the palm tree ⁵.

Here the description of the maritime provinces of Africa, in Herodotus, ends.

The island of *Cyranis* lays in the neighbourhood of the *Zygantes*, (*Melp.* 195.) and is said to be 200 stadia in length; of trifling breadth, and of easy communication with the continent. We can only suppose the islands of *Querkyness*, or *Kerki-*

⁴ Dr. Shaw, with much plausibility, supposes that the name *Zygantes*, or *Zugantes*, may have been derived from that of the town and mountain of *Zow-aan*, or *Zagwan*; situated about 40 G. miles to the SW of Carthage. See p. 184, 185; and his Map at p. 139.

Pliny has the *Libyphœnices* beyond Zeugitania; lib. v. c. 4: Ptolemy at the river *Bagrada*.

⁵ Page 225.

ness, the *Cercina* and *Circinitis* of the ancient geographers to be meant. Dr. Shaw (p. 193.) calls them "two flat and *contiguous* islands" at five leagues or less, from the continent, near the northern extremity of the Lesser Syrtis. He gives them, in his map, an extent (collectively) of about 80 stadia, but gives no description in his book. It appears that Diodorus mistook *Cyranis* for *Cerné*, (the modern island of *Arguin*); in ancient times a *Carthaginian*, in modern times, a *Portuguese*, settlement, on the western coast of Africa, near Cape Blanco. But Herodotus unquestionably intended an island in the Mediterranean, and that near Carthage⁶.

At *Cyranis*, gold sand was drawn up from the bottom of a lake, by means of a bunch of feathers, besmeared with pitch. (Melp. 195.)

From the variety of the matter relating to the Syrtes, we have purposely omitted to speak of them here, that we might not interrupt the course of the geographical detail: it will therefore be given separately.

It appears a remarkable circumstance that Herodotus should be utterly silent respecting the boundaries of the Carthaginian empire, although he was not only describing the continent which generally contained it, but also some of its provinces. It is true,

⁶ The difference of the two islands in point of size, is not great, *Cyranus* being about six or seven miles long, *Cerné*, five. *Cyranis* must not be confounded with *Cyranus*, or Corsica, to which the *Phocæans* retired after the Persian invasion of *Ionia*.

that the history of their state, formed no part of his plan ; nor was he writing a system of geography ; but one is surprised to find that, as he mentions certain transactions of these people⁷, he should have omitted to describe the position and extent of their empire. Perhaps there was a design in it. Nothing that was *Carthaginian* could sound pleasant in the ears of the Greeks, as the Carthaginians had leagued themselves with the Persian, the implacable enemy of the Greeks. For Xerxes, to facilitate his views on Greece, had encouraged the Carthaginians to traverse the plans of the Greeks, in Sicily. But he is silent respecting this circumstance also, although he speaks of the defeat of the Carthaginian army, sent to Sicily, on the above occasion. Polym. 166. It is from Diodorus that we learn the important fact of the treaty.

It does not appear that, in the time of Herodotus, the Carthaginians had extended their territory so far to the east, as to occasion disputes with the Cyrenians : for unquestionably, the incident of the *Philæni*, at the *Greater Syrtis*, was posterior to the age of Herodotus, when the *Auschisæ* and *Nasamones* possessed the coast beyond the *Hesperides*, and round the greater part of the *Syrtis*. And we must conclude that matters were in much the same state when Scylax wrote his *Periplus* ; for at that

⁷ That is, their commerce ; and their contests with the *Phocæans*, in *Cyrrus* ; and with the *Sicilians*. Also the meditated attack on them by Cambyzes, which they escaped through the manly conduct of their ancient brethren the Phœnicians. Thalia, 19.

time the Carthaginian boundary extended from the Greater Syrtis, to the Columns of Hercules, (p. 52.): and it also appears, (p. 47.) that the first place within their territory, going westward, was Neapolis, near the western point of the Syrtis *.

We have inserted in the Map the names and positions of the several nations between Egypt and Carthage, from the descriptions of our Author; and as many of these are corroborated by *Scylax*, and other authors, it appears that Herodotus knew, in effect, all the different divisions of territory, although he has not left us sufficient notices to arrange them geographically, without the aid of others.

* At the date of Hannibal's expedition to Italy (B. C. 217.) the Carthaginian empire extended eastward to the Philænian altars, which stood at the SE extremity of the Greater Syrtis. The story of the Philæni, as it is told, is in some points very improbable. It is said that the parties set out from their respective capitals, Carthage and Cyrene, and met at the place where the altars afterwards stood. Now, the altars were situated at about $\frac{7}{9}$ of the way from Carthage towards Cyrene; and the deception would have been too gross, had it been pretended that the Carthaginian party had travelled 7 parts in 9, whilst the Cyrenians had travelled no more than *two* such parts of the way. Would either party have trusted the other with the adjustment of the time of setting out? Perhaps, they mutually set out at the *opposite extremes* of the territory in dispute, and not from their respective capitals!

Pliny says (lib. v. 4.) that the Philænian altars were of sand or earth: that is, no doubt, they were *Tumuli*.

Strabo (p. 836.) names the *Euphrata* tower, as the common boundary of Carthage and Egypt, under the Ptolemies. This stood far to the west of the altars.

The conquests of Cambyses extended no farther westward than to Cyrene and the Hesperides. Melp. 204. Herodotus says, Melp. 168, "the nations of AFRICA are many and various: few of them had ever submitted to Darius (Hystaspes) and most of them held him in contempt:" which disposition towards the Persians continued also to the time of our Author. (See 197.)

Herodotus seems to have been fully apprised of the *saline* quality of the soil of Africa, in the quarter bordering on the Mediterranean; although he expresses some very odd ideas respecting the subject. For he describes a regular succession of vast *pillars* or *mountains* of *salt*, situated at 10 journies distant from each other, from the territories of the Ammonians to the neighbourhood of the Atlantes; Melp. 181, *et seq.*: and from thence, westward, *beds* of *salt*, at the same regular intervals, to the columns of Hercules. (Ib. 185.)

Now, although it is very improbable that either mountains, or beds of salt, should be placed in the above-mentioned regular order; yet we learn from Dr. Shaw, that both HILLS and BEDS, or lakes of salt, do exist in the country between Tripoly and Mauretania: also that the soil is generally impregnated with it, and that it sends forth a great number of copious salt springs. Shaw, p. 228, *et seq.* We learn too, from other authorities, that there are vast lakes of salt in other parts of the country; and it would appear that scarcely any country whatsoever contains so much salt on its surface, as that

region of Africa which borders on the Mediterranean⁹.

Dr. Shaw enumerates three mountains of salt only ; but Herodotus five. The Doctor went no farther eastward than the Lesser Syrtis ; otherwise it is possible that he might have told us of more. The Doctor's three, are : 1. *Miniss*, on the sea coast, near *Tennis*, (*Cartenna*) ; 2. *Lwotaiah*, situated inland at about 160 G. miles to the SSW of Algiers ; and 3. *Had-deffa*, between the lake *Triton* and the Lesser *Syrtis*. The five of Herodotus, are as follow : the first, amongst the *Ammonians* ; a second at *Augela* ; and others amongst the *Garamantes*, and *Atlantes*, and at *Mount Atlas*. As the intervals of distance given are quite wrong, we shall say nothing concerning that particular ; otherwise, than that one cannot, from those notices, refer either of the mountains in the one series, to any particular one in the other. Herodotus, however, speaks of salt of a *purple colour*, Melp. 185, and of a degree of hardness fit for building of houses ; and as Dr. Shaw gives a like description of the salt of the mountain *Had-deffa*, one might suppose this to be the purple mountain intended by Herodotus.

Dr. Shaw says (p. 229), " The salt of the mountain *Had-deffa* is as hard and solid as stone, and of a *reddish* or *purple* colour. Yet what is washed down from these precipices by the *dews*, attaineth another colour, becoming as white as snow, and

⁹ Pliny and Strabo also were both aware of the saline quality of the soil of this part of Africa.

losing that share of bitterness, which is in the *parent rock-salt*¹. The salt of the mountains near Lwotaiah and Jebbel Miniss, is of a grey, or blueish, colour.—See a farther account of the salt mountains and *salines*, in pages 35, 116, and 230. He speaks of no other purple salt whatsoever, but says (230), that he had seen some large pieces of *sal gem* brought from the country of the *Beni Mexxab* (that is, on the border of the *Sahara*, to the south of Algiers), but he is silent with respect to the colour.

In effect, Herodotus has spoken truly with respect to the *houses* of *salt*. He also fixes the scene in a tract where, says he, “it never rains; for if it did, these structures of salt could not be durable.” (185.) This remark is true of the country, generally, along the Mediterranean, between *Africa proper*, (which ends at the Lesser Syrtis) and the Red Sea; and more particularly in the *Jereed*, which is the tract bordering on the Syrtes, where the purple mountain stands.

Dr. Shaw says, page 219, “In most parts of the *Sahara*, particularly in the *Jereed*, (or dry country, p. 210.) they have rarely any rain at all. When I was at *Toxer*, at the lake Lowdeiah, or *Tritonis*, A.D. 1727, we had a small drizzling shower, that continued for the space of two hours; and so little provision was made against accidents of this kind, that several of the houses (built only with palm branches and tiles baked in the sun) fell down,

¹ Strabo says much the same of the Spanish rock salt, page 155.

by imbibing the moisture. Nay, provided the drops had been either larger or the shower of longer continuance, the whole city would have undoubtedly dissolved and dropt to pieces²."

In the order in which Herodotus enumerates the hills of salt, this is the *fourth*, or that situated amongst the *Atlantes*, 10 journies beyond (*i. e.* west of) the Garamantes, or people of Fezzan³. Whether the term *Atlantes* be falsely written, we know not; but it appears to be the same with the *Hammanians* or Hammanientes of Pliny⁴ (lib. v. 5.) situated at 11 journies to the west of the *Greater Syrtis*, and who had houses built of rock salt. It is certain that both accounts agree, in respect of position, to the province or Oasis of Gadamis: but we are ignorant of the fact of there being rock salt there.

Pliny indeed marks the country of the *Hammanientes* by a very striking particular, if true; that

² But rain falls in the western provinces along the coast of the Mediterranean, *during winter*, but not in summer. The Doctor's journal, at page 219, notes no rain but between 7th October and 2d May in 1732-3: and between September and May in 1730-1. The quantity was 44,8 inches in the first; 30,7 in the last.

Mr. Beaufoy makes no mention of rain in *Fezzan*; but in *Bornou*, within the *Tropic*, there is a regular rainy season; as there is also, apparently, through Africa in general, within a great part of the torrid zone.

³ The people of Fezzan have salt enough, it is said, "for their own consumption:" Afr. Assoc. 1790, ch. iv.

⁴ These are the *Ammantes* of Solinus.

they find water after digging to the depth of a cubit ⁵.

One is surprised to find Herodotus believe that "streams of water, equally cool and *sweet*," flowed from the summits of some or all of the hills of *salt*. (Melp. 181.) That water runs down from Had-deffa (from *dews* not rain), we are told by Dr. Shaw; but he tells us also, that it left, on evaporation, a beautiful white salt on the plain. (Page 229.)

The salt *plains* or *vallies* of *Arzew* and the *Shott* (Shaw, 114. 229.) may be supposed to be two of those meant by Herodotus; and which in their nature, may be compared to the salt plain near *Aleppo*; that is, the water, which at certain seasons flows into and covers them, is so deeply impregnated with salt, as to leave a thick crust over them, when evaporated. The *Shott* is described to be 50 miles in length, in the map: the valley of *Arzew* is only six miles in compass. Part of the lake *Lowdeiah* (*Tritonis*) is also a *saline*. (P. 230.)

But it would appear, that the region which contains so great a portion of salt, is confined to the *northward* of the Tropic; since salt is universally carried from that region, to the *central* and *southern* states. The kingdom of *Kasseena*, and the countries bordering on it to the south, are supplied from the salt lake of *Domboo*, a district of the kingdom of *Bornou*, situated within the vast desert of *Bilmah*, at 45 journies from *Agadez*, the ancient capital of

⁵ In the *Oases*, generally, the water lies very near the surface.

Kasseena, and nearly under the Tropic. The people of Agadez possess this *carrying trade*, and employ 1000 camels, which form an annual caravan ⁶.

The salt consumed in the inland part of Western Africa, is brought from mines situated on the southern edge of the *Sahara*. The reader will find many particulars relating to this subject, in the Travels of Mr. Park; and particularly in the Appendix to that work.

This inquiry, on the whole, gives a degree of credit to the assertions of Herodotus; since some of his *mountains* and *beds* of salt are found really to exist: and it is satisfactory to find such coincidences between him and modern authors.

⁶ See Proceedings of the Afr. Assoc. for 1790; chap. vii.

The salt lake of Dombou agrees generally to the position of the *Chelonides Palus* of Ptolemy, in respect of Cyrene. Pliny mentions a lake within the country formerly belonging to the *Psylli*, which was surrounded by deserts. Its name was *Lycomedis*. Pliny, lib. v. c. 4.

SECTION XXIII.

CONCERNING THE TWO GULFS, ANCIENTLY DENOMINATED
THE SYRTES: AS ALSO CONCERNING THE LAKE AND
RIVER TRITONIS; THE TEMPLE AND ÆGIS OF
MINERVA; AND THE ANTIQUITY OF THE MANUFAC-
TURE OF DYED SKINS IN AFRICA.

The SYRTES, the terror of ancient mariners—Irrregular tides and quicksands, the causes of the danger—Position and extent of the Syrtes—Lake Serbonis, a kind of Syrtis—General ideas of the ancients respecting them—Imperfect state of the ancient navigation, an additional cause of danger—GREATER SYRTIS, or Gulf of Sidra—Poetical description of it by Lucan—Goodwin Sand, compared to the quicksands of the Greater Syrtis—LESSER SYRTIS, or Gulf of Kabes—Its description by the ancients, agrees pointedly to that by the moderns—Its Tides—Lake of Tritonis, or Lowdeiah, anciently communicated with the Syrtis—Herodotus included both under the name of Tritonis—Jason driven amongst its shallows—Difficulties respecting the river Tritonis, attempted to be solved—Ægis and Temple of Minerva, at the Lake Tritonis—Greeks borrow the Ægis from Africa—Antiquity of the manufacture of dyed skins, in Africa—Used in the Tabernacle in the Wilderness—That and the Ægis covered with the same kind of skins.

THE SYRTES, which were the terror of ancient mariners, are two *wide, shallow* gulfs, which pene-

trate very far within the northern coast of Africa, between Carthage and Cyrene; in a part where it already retires very far back, to form the middle bason, or widest part of the Mediterranean sea. The north and east winds, of course, exert their full force on these shores, which are entirely exposed to them: at the same time that not only certain parts of those shores are formed of moveable sand, but the gulfs themselves are also thickly sown with shallows of the same kind, which, yielding to the force of the waves, are subject to variation in their forms and positions. To this must be added the operation of the winds, in checking or accelerating the motions of the tides; which are therefore reducible to no rules. And from these causes, combined, the depths are so uncertain; that experience, it would appear, proved of no avail to mariners¹.

The two Syrtes are more than 200 G. miles asunder, and were distinguished by the terms GREATER, and LESSER; of which it would appear, Herodotus knew only the *former* by the name of

¹ It is a common idea, that there are *no tides* in the Mediterranean. Nor do they indeed rise in any part of that sea, in a degree sufficient either to effect the usual purposes of laying ships on shore to *careen*; or even in many places so as to affect the senses of those who are accustomed to view the ordinary rise and fall of tides on the coasts of the ocean. But that a *tide* does exist, is certain; and that it rises five and six feet in particular places. Herodotus speaks of the ebbing and flowing of the tide in the gulf of *Melis*; which, he says, "may be seen every day." Polym. 198. This is the small gulf on which *Thermopylae* stands.

Syrtis, the latter by that of the *Lake Tritonis*³. Not but that both were known, and had obtained the above distinctive names, in the time of Scylax³, whom we may conceive to have written before the time of Herodotus⁴. But it is remarkable that our author is entirely silent concerning the properties of the *Syrtis* which he thus mentions by name, whilst he speaks of the dangers of the other in a pointed manner. We are not, however, from this silence, to infer that he was ignorant of the dangers of the Greater *Syrtis*⁵.

The greater *Syrtis* bordered on the *west* of the province of *Cyrenaica*, and penetrated to the depth of about 100 miles within the two capes, that formed its mouth, or opening; which were, that of *Boreum* on the *east*, *Cephalus*, or *Trieorium* on the *west*⁶. In front, it was opposed to the opening of the

³ Scylax (page 48) also names it *Sinus Tritonicus*; and *Syrtis parva*; and Strabo, p. 834, the gulf of the *Lotophagi*.

⁴ Pages 48, 49.

⁵ Scylax appears to have lived in the time of Darius Hystaspes.

⁶ The *Serbonitic* lake, near Mount Casius, situated between Palestine and Egypt, appears to have been a kind of inland *Syrtis*. Diodorus describes its borders as being formed of a very dangerous kind of quicksand, (lib. i. 3.): and says (lib. xvi. 9.) that *Artaxerxes Mnemon* lost part of his army there, in his march into Egypt; about 350 B.C.

M. Maillet, p. 103, supposes it to be quite filled up.

⁶ The boundaries of the greater *Syrtis* cannot well be misunderstood, as the capes which confine it are so marked and prominent. See Strabo, p. 836. Ptolemy, *Africa*, Tab. II.

Adriatic sea : and the Mediterranean in this part expanding to the breadth of near 10 degrees, (which is its greatest breadth) exposed this gulf to the violence of the northerly winds.

Scylax reckons it a passage of three days and nights across its mouth, which, however, measures no more than 180 G. miles, on the best modern maps⁷. It is not, however, pretended, either that the whole extent of this space was *equally* dangerous, or that there were dangers in every part : on the contrary, there is every reason to suppose that the dangers were confined to particular parts of it.

The *lesser* Syrtis lay opposite to the islands of Sicily and Malta. It appears to be no more than 40 to 50 G. miles in breadth, but penetrates about 75 within the continent ; and we have Scylax's word, that it was the most dangerous of the two⁸. The islands *Cercina* and *Cercinnitis* (*Cyranis* of Herodotus⁹), bounded its entrance to the *north* ; *Meninx*,

⁷ This allows about 60 for each day and night, collectively. Pliny, from Polybius, says, lib. v. c. 4. that it is 313 MP. (rather 213) across. The numbers in Strabo, expressive of the dimensions of both Syrtes, are corrupted, p. 834; et seq.

⁸ Page 48.

⁹ Melp. 195. The boundaries of the lesser Syrtis are not so marked as those of the greater. Strabo (123 and 834.), fixes on the islands of *Cercinna* and *Meninx* (*Kerkiness* and *Jerba*). He allows it a breadth of 600 stadia, or 51 G. miles only. Shaw has 76 : D'Anville, 42 : a mean would come near to Strabo.

Pliny, from Polybius, allows 100 MP. say 80 G. miles. The whole extent of *both* Syrtes, together with the intermediate space of 250 MP., is collectively, according to Pliny (lib. v. c. 4.) 667 MP. : and the distance is not much short of it.

or that of the *Lotophagi*, on the south. It was here, that Jason is said (by Herodotus) to have been in imminent danger of shipwreck, previous to his setting out on the Argonautic expedition. Melp. 179.

There are several short descriptions of the Syrtes on record, but that of Lucan is the most pointed ; and, making allowances for the colouring given by a poet, not very different from that given by Edrisi in latter times, or indeed what may be collected from Strabo.

Pliny informs us that Polybius had written a description of them ; which, perhaps, from the acuteness and accuracy of that author, might have been a better one than any that has come down to us. It may be supposed to have been a part of the information collected by him whilst employed in exploring the coasts of Africa, by Scipio, lib. v. c. 1. Pliny has quoted, from this description, little more than the bare dimensions of the Syrtes, which we have already given. It appears that Pliny, in some degree, confounds the *two* Syrtes together, lib. v. c. 4 ; but it is clear that the nature of the dangers which they present, were essentially different ; those of the Greater Syrtis being produced by the quicksands, both on the shore and in the offing ; and which were rendered more formidable by their great extent : but the dangers of the Lesser Syrtis arose more particularly from the variations and uncertainty of the tides, on a flat, shelvy, coast.

In effect, Pliny supplies no description at all of the Syrtes ; he just says, that they are horribly dangerous (lib. v. c. 4). Neither does Solinus : but both of

them seem to consider the irregularity of the tides, as the sole, or chief cause, of the dangers.

Strabo (836.) imputes them not only to the tides, but to the flatness and oozyiness of the bottom : and he observes, that ships, whilst navigating this part, kept as wide as possible of the indraught of the gulfs. He seems to consider the two Syrtes as nearly on a par, in respect of the dangers which they presented.

It appears that the improved state of navigation, amongst the moderns, has stripped the Syrtes of the greatest part of their terrors ; since most of the dangers must probably have arisen from the difficulty of working off a *lee shore* ; for which purpose the ancient ships were very ill calculated, in comparison with modern ones. The slow progress of those ships, which kept them so long in the neighbourhood of dangers of every kind, would add to that risk ; and these deficiencies combined, must very often have proved fatal in stormy weather ; although a modern ship, well fitted, would, under similar circumstances of situation, have been unconscious of any danger¹. It is also to be considered *here*, that the coast being in many parts bordered by quicksands, their accustomed refuge of drawing up their ships on the beach could not be resorted to. Thus, modern improvements may be said to have removed *that* which was the greatest terror of ancient navigations, when a lee shore happened to be inaccessible.

¹ This equally applies to other dangers, as those of *Scylla* and *Charybdis*, &c.

Of the GREATER SYRTIS in particular.

Marmol says that the natives still call this gulf *Syrte al Kibbeer*, which has precisely the same meaning with the ancient name: and it certainly continues to be known to mariners by the name of *Sidra* or *Seedra*². The oriental geographers report, that the remains of the city of *Sort* or *Serte*, are found at the inner part of the gulf; and the position answers to that of the *Macomades Syrtis* of the Antonine Itinerary (p. 63.); that is, at 232 MP. from *Leptis Magna*, or *Lebida*; 208 from *Tiniodori*, or *Tineh*³.

² Rowe says, *Soloco*. There is a place of this name in Edrisi, said to be situated on the east side of the Syrtis.

³ Edrisi, p. 88, 92, 93, has a route along the coast from Tripoly to *Sort*, or *Serte*; between which places, the distance given, is 230 A. miles, or 246 geographic, in the gross; but the detail allows no more than 210 A. miles, or 222 geographic. He says also, that it is travelled in 11 days, which would give about 200 such miles only. Probably, we ought to adopt the 222, and then the interval between *Sort* and *Wadan*, which Edrisi fixes at five journies, or 95 G. miles, will agree; *Wadan* being situated directly south from *Mesurata*, according to Mr. Beaufoy's MSS.

Abulfeda mentions the *remains* of the city of *Sort*, in his Africa, Tab. III. at the end; and also says, that on the *west* of this city is a gulf of the sea, named *Rodaik*, or *Rodakiah*, apparently the same with the *Zadic Sinus* of Edrisi, p. 92, near to which stands the town of *Asna*, 102 A. miles, or 108 G. miles, to the SE of the promontory of *Kanam*, taken for the *west* point of the Greater Syrtis; near *Mesurata*. It must here be noted, that Edrisi allows 46 A. miles between *Asna* and *Sort*, (p. 88.); but we suspect that it should be 26 only, and that the excess of

How dangerous soever certain parts of this gulf were, yet it appears from Strabo amongst the ancients, and P. Lucas amongst the moderns, that more than one port within it was frequented by trading ships; so that notwithstanding the mouth of it was thickly sown with shallows, yet bold and enterprizing navigators made their way through them. And it may be pretty clearly collected, that the part so much dreaded and avoided was at the SE of this Syrtis, where the *Philænian* altars were situated, and where the sea enters deepest into the land.

Edrisi informs us, p. 93, that about 70 G. miles of the road leading along the gulf, is through land which is in a manner in a state of *solution*, occasioned either by the *sea-water*, or by the natural moisture of the soil. Now, as the part in question borders on an extensive desert of sand (that of the *Psylli* and *Nasamones*), the moisture can only arise from the sea-water. The site of this tract is precisely at the place where the deepest part of the gulf strikes to the SE, and where the *Philænian* altars are placed by Ptolemy; around which the road makes a wide detour between Tripoly and Cyrene. How much more than 70 miles this kind of ground may extend to the westward, we know

20 miles in the aggregate, over the detail, arises in this place. There is no line of distance to be depended on between *Sort* and the head of the *Syrtis*; but from thence to Barca, the distance, 153 A. miles (p. 92), agrees.

not, for the road, for many journies, thence strikes inland ⁴.

A second gulf, bordered by shores of the same nature, but of much less extent, penetrates the country at *Asnah*, in the SW part of the Syrtis ⁵. This is the *Sinus Zadic* of Edrisi; *Rodaik* of Abulfeda. Sort is situated between these two quicksand gulfs.

Strabo states, p. 836, that *Aspis* was the best port in all the Syrtis. This place is found in Ptolemy, on the west side, at about 60 miles within the promontory of *Triæzorium* (near Mesurata). Strabo next places the Carthaginian *emporium* of *Charax*, doubtless the *Pharaxa* of Ptolemy, and perhaps the *Asnah* of Edrisi, though the nature of the gulf of Zadic seems unfavourable to the establishment of an emporium. The *Isporis* of Ptolemy answers to the site of Sort, although in this latter we should look

⁴ Edrisi, p. 92, also mentions five *towers* in different positions in the desert tract, west of the *quicksand*. One of these, (*Hasan*,) at four journies *within* the western point of the *Syrtis*, agrees to the *Euphratas Turris* of Strabo, (*Euphranta* Ptol.) between *Aspis* and *Charax*, said to be the common boundary of the Egyptian empire (under the *Ptolemies*) and *Carthage*, (p. 836.) One of the other towers, (*Aaras*,) said to be very large, contained within it a *deep well*, or reservoir for rain water. The others may have been to cover wells also, and to serve at the same time for *sea-marks*. It is not unusual in the East to build a kind of tower over wells in the Deserts, to shelter them from the drift sand. The Castilian ambassadors to Tamerlane, in 1399, mention them.

⁵ Edrisi says (p. 92.) that the sea, by penetrating, occasioned the land to sink into pits or holes.

for the emporium of Strabo, as he mentions no place between it and the Philænian altars. However, the nature of the information is such, that no position can be critically placed from it. But, at all events, Strabo's words imply, that there are no ports in the SE part of the Syrtis, which is perfectly consonant to the descriptions of the coast, ancient as well as modern ; and hence we may justly conclude that this was the part avoided by mariners.

Pliny and others, in speaking of the Nasamones, brand them with the character of being infamous for plundering of wrecks. This of course bespeaks a dangerous coast ; and the quicksands are precisely on the shore inhabited by these people ⁶.

Strabo furnishes another fact relating to this Syrtis. He says that Cato, in marching from Berenice round the Syrtis (towards Carthage) was compelled, together with the army which he led, to pass through *deep sands*, and *inundations caused by the tides* ; in effect corroborating what Edrisi says.

This event happened after the battle of Pharsalia, and the retreat and death of Pompey in Egypt. The object of Cato was to join his forces to those of Juba and Scipio, in the neighbourhood of Carthage. Strabo says, that Cato had 10,000 men, which he divided into separate bodies, that they might more conveniently obtain supplies of water in that arid region, (p. 836). That they marched on foot, and

⁶ It has already been mentioned, that our traveller, Mr. Bruce, was shipwrecked here, and proved the truth of this remark.

completed the tour of the Syrtes from Berenice in 30 days. Those who examine the distance will find that the rate of marching was $11\frac{1}{2}$ G. miles in *direct* distance, or about *one* mile above the mean of ordinary marches, which is 10,6.

Plutarch says, that Cato marched in winter from Cyrene, and that he took with him some of the *Psylli* (whose *former* dominions, which had been usurped by the Nasamonians, he was compelled to pass through) to charm the serpents, which were said to abound there, and to cure their stings.

We trust that the reader is by this time abundantly satisfied, as to the consistency of the ancient descriptions of this Syrtis.

Lucan appears to believe, that the bottom of the Syrtes was growing *firmer* and the water shallower, and surmises that they (or rather the Greater Syrtis *alone*, for of that only he seems to speak) may hereafter become dry and solid. What changes, in point of form and extent, they may have undergone, or if any, we know not; but it is certain that they have hitherto preserved their original properties.

The description of the *Syrtes* by Lucan⁷ has a

⁷ Translated by Mr. Rowe.

The *Syrtes*, nor quite of sea nor land bereft,
 A mingled mass uncertain still she left;
 For nor the land with seas is quite o'erspread,
 Nor sink the waters deep their oozy bed,
 Nor earth defends its shore, nor lifts aloft its head.
 The site with neither, and with each complies,
 Doubtful and inaccessible it lies;

}

boldness peculiar to it; and it is possible that he may not, in any great degree, have heightened the description, for our *Goodwin Sand* possesses much

Or 'tis a sea with shallows bank'd around,
 Or 'tis a broken land with waters drown'd ;
 Here shores advanced o'er Neptune's rule we find,
 And there an inland ocean lags behind.
 Perhaps, in distant ages, 'twill be found,
 When future suns have run the burning round,
 These *Syrtes* shall all be dry and solid ground :
 Small are the depths their scanty waves retain,
 And earth grows daily on the yielding main.

}

Lib. ix.

It may be remarked that the geography of this part of Lucan's poem is somewhat confused ; but we are of opinion that some of Mr. Rowe's notes are founded on misconceptions, either of the geography itself, or of Cato's progress, and therefore do not even render to the author his due merits.

The palpable errors of Lucan in this part of the geography are, the conducting of Cato by the *oracle of Ammon*, in his way from *Cyrene* to *Carthage* ; the placing of the *Garamantes* on the *sea coast*, and the gardens of the *Hesperides* at the *lake Tritonis*, an error into which Strabo himself falls (836.), by placing that lake at *Berenice*, in *Cyrenaica*. Pliny and Solinus are in the same error : Ptolemy places it at the Lesser Syrtis.

We are aware that many totally disregard geographical consistency in poetical description ; but for the sake of youth, whose minds frequently receive the first ideas of classical geography from the poets, one could wish that truth had been attended to, we mean where human agency is given as the means, for there things should be represented naturally. In this poem the Romans are represented to have passed by the oracle of Ammon, although they had left it a month's march behind them, at their setting out. It ought not to have been through ignorance on the part of Lucan ; for the position of the temple of Ammon was well known at Rome in his time.

the same properties as the shallows and coasts of the Greater Syrtis.

The Goodwin Sand is so firm and cohesive, at *low water*, that Mr. Smeaton found it difficult to insert in it an iron crow to fasten his boat to ; although, as soon as the tide flowed up, it would not bear the weight of a man. We cannot help remarking a vulgar error, respecting the origin of this sand-bank. It is unquestionably not a *remnant* of *land*, but an *accumulation* of *sea sand*, by the meeting, and eddy motions of the opposite tides, near the Strait of Dover.

The same cause, operating more remotely, has probably occasioned a general accumulation of matter along the coast, to the westward ; but more particularly at *Dungyness*, and in the bay between it and *Hastings*. *Dungyness* has gradually increased, and is still rapidly increasing ; partly by means of artificial works, partly by the operation of the tides. This great projection of the coast has been fatal to the ports of *Rye* and *Winchelsea* ; and we account for it, in this way : the more the point projected, the more the stream of the flood tide would strike *obliquely* from the shore near *Hastings*, leaving more and more *still* water, in the bay of *Rye* ; where the sand would continually settle, and fill it up, as we now see it. The ebb tide would in like manner be thrown obliquely from the shore of *Hythe* and *Dimchurch* ; even more so than the flood from *Hastings* and *Fairlight*. Thus the accession of a vast tract of rich land in Romney Marsh, has been at the expence of the ports above-mentioned. But it

is perhaps a matter of little consequence ; as the increased size of ships of war, would have rendered Rye of no use at present, had it continued in its former state.

The Goodwin Sand has no doubt been forming, ever since the happy disruption of our island from the continent. Many thousands of years may have passed away before it appeared above water ; and when it did, we were not a naval power, and took little notice of it. The story of Earl Goodwin was probably invented after that ; and there can be no doubt of the increase of the Goodwin, at the present moment, and of its slow progression towards the state of firm land.

Let those who doubt the facts here set forth, attend to the changes at *Ephesus*, at *Miletus*, at *Myriandrus* in the gulf of *Issus*, and various other places.

LESSER SYRTIS.

Dr. Shaw, p. 194, gives a short description of this gulf^a, and its tides ; but which, notwithstanding, enables us to judge sufficiently of the nature of the dangers which it presented. After stating that it properly begins at *Cape Capoudia* (that is, *Caput Vada*) he says, “ from this cape all along to the island of Jerba (*i. e.* of the *Lotophagi*) we have a succession of little flat islands, banks of sand, oozy

^a Now the gulf of *Kabes* : by him called *Gabbs*.

bottoms, or small depths of water. The inhabitants make no small advantage of these shallows, by *wading* a *mile* or *two* from the shore, and fixing, as they go along, in various windings and directions, several hurdles of reeds, frequently inclose a great number of fishes. Something like this has been taken notice of by Strabo⁹.

It is certain that the single fact of wading a mile or two into the sea, does away all idea of *quick-sands*, in this place : so that *these* must necessarily be confined to the *other* Syrtis, although this one may be equally, or even more dangerous (as indeed Scylax reports it to be), from its exceeding flatness, the intricacy of its channels, and its particular exposure to the raging east winds ; but more particularly from the variation and uncertainty of its tides, occasioned by the winds.

Dr. Shaw was informed (p. 194.) that frequently at the island of Jerba, on the south side of the Syrtes, the sea rose twice a day, a *fathom* or *more* above its usual height : but during his stay on the coast, the easterly winds were too violent to enable him to notice it : that is, we may suppose, the sea was kept up to a pitch nearly equal to high water-mark, by the pressure of the wind on the waters, in the mouth of the gulf¹.

⁹ What Strabo says, p. 835, is indeed a most perfect corroboration of Dr. Shaw's report.

¹ The Marquis de Chabert, during his short stay on this coast in 1766, remarked that the tides rose three feet : but the marks on the shore shewed a rise of five (French) feet, at the highest tides ; agreeing nearly with the report of Dr. Shaw.

The tides in *the Syrtes* are spoken of by several of the ancient authors, as well as by Edrisi, amongst the moderns ; but none of them mention the height to which they rise.

The reports of Dr. Shaw and of the Marquis de Chabert, the one from the information of the natives, the other from his own observation of high water-mark on shore, agree very nearly with those made at Venice, where the tide is generally supposed to rise as high as in any part of the Mediterranean.

Strabo, Polybius, and Pliny, all speak of a tide in this place, but are silent respecting its height. It appears doubtful whether the former (p. 835.) meant to say that it prevailed in *both* Syrtes, or only in the *lesser* one : but we suspect that he extends it to both, which is contrary to the idea expressed by M. Chabert. Polybius gives a striking instance of the rise and fall of the tide, near the island of Meninx, adjacent to the Lesser Syrtis, by their effects on the Roman fleet, (commanded by Servilius and Sempromnius) which grounded on the sands, and thereby lost their equipage and necessaries. Lib. i. c. 3. Pliny speaks with much clearness on the subject of tides *in general*, and particularly, of those in the Mediterranean. He remarks, lib. ii. 97, that although

The Marquis perceived the rise and fall to be more sensible along the coast of *Africa proper*, between C. Bon and Kabes, than elsewhere ; and that it diminished all the way eastward to the Greater Syrtis. (*Hist. de l'Académie des Sciences*, 1767.) This might reasonably be expected. The wave of tide is suddenly opposed in front by the eastern coast of Tunis ; and also compressed laterally by the Island of Sicily.

the tides are weaker in inland seas, as yielding less to the power of the sun and moon, yet that these seas are also in some degree affected : more especially in the wider parts, which afford some scope to the attraction of those bodies ; but that those effects are more obvious near the *shores*, than in the open sea. Having instanced the high tides near to, or about BRITAIN, he also observes that the Syrtes, from the form and position of their shores, give rise to very irregular tides, reducible to no rule ; whilst those in the mouth of the strait of Messina, and in the *Euripus*, return at stated intervals ; although those intervals may be different from those in the ocean, or in other parts of the Mediterranean².

But Pliny gives, in one instance, as the effect of the tide, what should rather be imputed to a current : for he says, that during calm weather, ships have been carried by the tide in three days from *Italy* to *Utica* (more probably from *Sicily*.) This was, no doubt, a westerly current, occasioned by the return of the water from the middle and eastern basons of the Mediterranean, after a long continued westerly wind. A current of this kind, is noticed in the *Memoirs of the French Academy*, in the neighbourhood of Tunis ; and happens very frequently in the Caspian sea, on a change of wind.

Edrisi, p. 87, mentions the tide in the Lesser Syrtis, and in the river of Kabes ; but at no other place in the Mediterranean sea : which shews, at

² He also mentions the tide in the Syrtes, in lib. v. c. 4. Scylax, p. 49, also mentions the different heights of the sea in the Lesser Syrtis.

least, that it is much more perceptible at Kabes, than in other places. Edrisi resided in the island of Sicily.

Modern observations point out a rise of about five feet at Venice, but only twelve or thirteen inches at Naples³, and at the *Euripus*. One would certainly expect from the form and position of the gulf of Kabes, and of the head of the Adriatic sea, that the tide should attain its *maximum* there; since the wave raised by the attraction of the moon, in the eastern part of the Mediterranean, would in those places, not only receive a *check*, in front, but be also compressed *laterally*, by the contraction of the shores.

From the authorities which we shall presently adduce, we can suppose no other than that this Syrtis did once enter much deeper into the land; and that it even formed a junction with the lake *Lowdeah* within it; the *Tritonis Palus* of the ancients. Otherwise we must not only reject the reports of Herodotus and Ptolemy, but that of Scylax also, the writer of a Periplus, and who ought to have known the truth. But before we set forth the opinions of those authors, concerning the lake and river Tritonis, we shall examine Dr. Shaw's account of them, as well as of the adjoining country, to the borders of the Syrtis.

This lake, to which the Doctor allows an extent of 20 leagues (in his text, p. 212, but upwards of

³ My friend, Sir Charles Blagden, made observations to this effect in 1792.

24 in his map at p. 139,) in length, and six in breadth, is rather, as he observes, *three* lakes in one; for, says he, "it is not all of it a collection of water, there being several *dry* places, which like so many islands, are interspersed over it." He also endeavours to account for Ptolemy's *triple* division of it, by taking the parts thus separated, for the different lakes of *Libya*, *Pallas*, and *Tritonis*. He adds (211.), that "the lake is named LOWDEAH, or the LAKE OF MARKS, from the number of trunks of palm trees, that are placed at proper distances, to direct the caravans in their marches over it. Without such assistances, travelling would be here both dangerous and difficult, as well from the variety of pits and quicksands, that could no otherwise be avoided; but because that the opposite shores (as we may call them) have no other tokens to be known by, but their date trees. And as these are rarely seen at above 16 miles distance, great mistakes might be committed in passing over a plain of this extent, (where the horizon is as proper for astronomical observations, as at sea;) without such convenient marks and directions."

It appears by his map at p. 139, and his descriptions, that the space between the east end of the lake, and the inmost recess of the Syrtis, is also *flat*, and but little raised above the level of the sea; and is of such a loose sandy nature, as to absorb the waters of a river, that runs into it: for the rivulet of *El Hammah*, which runs from the higher grounds, towards the *east* end of the lakes, for some miles, *loses itself in the sand*: page 214. This space between the

lake and the sea, appears to be about 22 miles in length; 10 or 12 in breadth, between the foot of a remarkable mountain of salt (*Had-deffa* ⁴) on the north, and the chain of hills which shuts up the Syrtis to the southward ⁵, passing by El Hammah, in its course from the lake of Lowdeah. We are aware that M. D'Anville shuts up the lake from the sea, with a chain of hills: but for this, however, no shadow of authority appears; and Dr. Shaw, on the contrary, describes the intermediate space as being low and flat.

Thus, the lake itself, and its environs, seem to compose a great mass of *sand* and *water*, intermixed in various proportions. Of the whole sea coast of the Syrtis we have already given a description, from the Doctor's own words: "a succession of little flat islands; banks of sand, oozy bottoms, or small depths of water; in fact *so flat*, that the people wade a mile or two miles into the sea, to fix their fishing apparatus." P. 194. And at *Ungba*, the shore itself is a *morass*, or *imperfect* land, to the extent of several miles: p. 195.

Again, he describes the land to have *gained*, and to be still *gaining*, on the sea, at Kabes; where the ancient town taken for *Tacape*, is left half a mile inland. P. 196. But Kabes lies *beyond* the lake: for the part of the coast opposite, and nearest to, the lake, is that where the river *Ackroude* falls in.

⁴ See before, page 309.

⁵ This chain terminates on the coast, opposite to the island of Jerba (Meninx, or *Lotophagitis*) where it forms the boundary of Tunis, on the one hand, and Tripoly on the other. Shaw, pages 189, 197, 229.

This is, however, a periodical stream, and its bed was dry when Dr. Shaw was there. It must be *here*, that the ancient place of communication with the lake is to be looked for, if at all: and we have little doubt but that such a communication did actually exist. It is described by Scylax, as well as by Ptolemy. This latter geographer, who had much knowledge of the detail of the coast (as far as relates to *description*, how much soever he may fail in geometrical exactness), positively describes a passage from the Syrtis into the lake, on the *north* of Tacape, (or Kabes): in effect, in the very position just mentioned. Ptolemy, we may conceive, had heard of it, although his information might be vague: but we may suppose Scylax to have been in possession of information of a more practical kind from navigators; or even from his own observations.

Scylax says, "In this Syrtis (the lesser one) is the island and river of Triton, and the temple of Minerva *Tritonia*. The mouth (or opening) of the lake, is small, and in it, on the reflux of the sea, is an island." Then follows a corrupted passage; but which perhaps should be thus: "When the island is *covered* (that is, when the tide is up) ships may enter the lake." He continues to say, that the *lake* is large; being about 1000 stadia in circumference (it is, however, much larger); that it is surrounded by Libyan nations, and has cities on its western border, as also fertile and productive lands. P. 49. This particular agrees with Herodotus, who places, as we have seen above (page 302), husbandmen on the west of the lake. Now, to what can the above refer, but to a lake

within the Syrtis; for the Syrtis itself, has, as we have shewn, a very *wide* opening, and grows *narrower within*? Therefore, the description, if a just one, cannot be meant for the Syrtis, but for a lake within it.

It is unquestionable that Herodotus did not know the Lesser Syrtis by any other name, than that of the lake Tritonis; for it is clearly what he describes for that lake; or more probably an extension of it. Melp. 179. Nor is the idea peculiar to him. Scylax, p. 48, according to the probable reading of the word *Δρονίτης*, rendered by Vossius, *Tritonites*, calls the whole gulf of *Kabes*, "*the great lake of TRITONIS*;" and in which, the *Lesser Syrtis*, called also *Cercin-nitica*, is included as a part of it. Hence, it would appear, that, in the times of Scylax and of Herodotus, it was the custom to call the whole Syrtis and lake, collectively, the lake or gulf Tritonis; although in later times, *i. e.* those of Polybius, Strabo, Pliny, and Ptolemy, the term Syrtis was applied separately to the bay or gulf; Tritonis to the lake⁶. The application of the same particular name, by Scylax and Herodotus, whilst the authors posterior to Hero-

⁶ Strabo, it appears, had not heard of any other lake *Tritonis*, than that at *Berenice*. (836.) (His lake of *Zuchis*, p. 835, is near the island of *Jerba*.) *Solinus* thought as Strabo did: Pliny believed the same, but says that *others* said it was on the west of the Lesser Syrtis. *Lucan*, as we have seen, refers the lake, and its whole history, to the neighbourhood of *Berenice*.

It is remarkable that neither *Edrisi* nor *Abulfeda* speak of the lake of Lowdeah, although the former mentions the city of *Tuzer*, or *Tozer*, which stands on its very banks.

dotus, use a different name, furnishes at least a presumptive proof, that Scylax wrote very early.

We must therefore regard the lake Tritonis of Herodotus, as the Lesser Syrtis and lake of Lowdeah, *united*: and must conclude that he either *knew*, or *took for granted*, that the dangerous gulf, into which he describes Jason's ship to have been driven; together with the *water* which received the river Triton, and which also contained the island of the same name, were one and the same. He relates, that Jason's ship, the *Argo*, built at the foot of mount *Pelion*, was driven amongst the shallows of that lake by a storm from the promontory of *Malea* in Peloponnesus: for he says, that before Jason could *discover* the *land*, he got amongst the shallows of the lake Tritonis, &c. Melp. 179. Indeed, it might be asked, how a storm from the *northward* could effect this transit at all; since the Lesser Syrtis bears to the *west* of Malea? Had he said that Jason was driven to the *Syrtis*, instead of the lake *Tritonis*, we must of course have looked to the *Greater Syrtis*, in which case a northerly wind might have done it. But it is not, in the present case, the consistency of the history, but the combinations which that history gave rise to, in the mind of Herodotus, that we are to attend to'. He believed that a ship had been driven by a storm, into the lake of Tritonis; and therefore must have supposed it, of

' Mr. Bryant well observes, that references to the *Argonautic* expedition are interspersed in most of the writings of the ancients, but that there is scarce a circumstance concerning it, in which they are agreed. [Mr. Beloe.]

course, to be a *gulf* of the *sea*, not an *inland lake* : and the Lesser Syrtis answers to the gulf intended, but must necessarily have undergone the change above-mentioned.

Dr. Shaw was clearly of opinion that the lake in question was the Tritonis, but seems to have had no suspicion of its ever having communicated with the outer gulf. See page 212 ; and also his map at p. 139. A large island in this lake, situated 40 miles from the gulf, he supposes to be the *Phla* of Herodotus, Melp. 178 ; or the Triton Island of other authors. But if we are to suppose an ancient communication, now closed up by sand gradually thrown up by the surge of the sea, as has been before remarked at Arsinoe, we may naturally suppose that a great deal of the lake itself has been filled up by the same operation ; and that a large portion of the flat space, between the eastern part of the lake and the Syrtis, was anciently a part of the lake, which might have been separated from the sea by a bar of sand only, through which the narrow opening described by Scylax passed. If this be admitted, we may conceive the island of *Phla* to make a part of this *new-made plain*, examples enough of which are to be found in other places. And such an idea gives the more consistency to the expressions of Herodotus, and Scylax, when they speak of the island of Tritonis as being in the Syrtis.

To us nothing appears more probable, than that such a change should have taken place, in a situation where the continued operation of the surge of the sea (on a flat coast, bordered by moveable sands),

is that of depositing sand in every hollow part ; and where there was no back-water to sweep it away : for whilst the communication existed, we should expect a current running *into* the lake rather than *out* of it ; as the evaporation would be, in all probability, greater in the lake than in the open sea ; and as very little water is received into it from rivers.

Respecting the *river* Tritonis, in our idea, some difficulty occurs. Dr. Shaw takes for granted, that it discharged itself into the *outer* gulf or Syrtis ; and therefore naturally fixes on the river of Kabes (or Tacape) ; a fine stream, said to be of the size of the *Cherwell* (p. 197), and springing from the *hither* side of the chain of *mountains* before-mentioned ; which mountains approach within about three or four leagues of Kabes, on the SSW. But this river is quite wide of the position of the ancient communication with the lake, admitting it to have existed^s.

The lake itself is, at present, as salt as the sea, p. 213, which may arise either from the sea-water oozing through the sand, or from the salt rivulets, which flow into it from a soil strongly impregnated

^s Dr. Shaw says of this river, p. 197, that the waters of it are " cantoned out into a number of artificial channels," to water the plantations. Pliny remarked the same, lib. xviii. c. 22 ; for he says, that the waters of a copious fountain at *Tacape*, (the same place with *Kabes* or *Gabbs*) were divided in portions to the cultivators : that is, each had the use of the water during a certain interval of time. The chief culture at present, according to Dr. Shaw and Abulfeda, is the *Alhenna* or *Henna* plant, which requires much water.

It has appeared that Abulfeda says the same of the waters of *Gadamis* : so that the arrangement appears to be systematical.

with that mineral; or even from the salt washed down by dews and *occasional* showers from the salt mountain of Had-deffa, on the border of the lake. See p. 309. It cannot, therefore, be imagined that, even if the water of the lake had ever run into the sea, that such an opening could have been denominated a river; and, indeed, Scylax speaks of the opening, and of the river, as two *distinct* objects.

If it be allowed that an *extension* of the lake, as well as a communication with the sea, ever existed, we have no difficulty in supposing the rivulet of *El Hammah* to have been the river Tritonis. At present this rivulet, formed of several *hot* springs, which furnish a number of baths, (and whence its name *El Hammah*), runs several miles *towards the lake*, and there loses itself *in the sand*. If, then, this loose sandy tract occupies a portion of the ancient lake, here we have the river *Tritonis*. Herodotus, it is true, calls it a GREAT stream, or a *considerable* river; but as there is no choice, but between the river El Hammah and that of Kabes, the *Tritonis* could at no rate be larger than the *Cherwell*⁹. Dr. Shaw makes no comparison of the Hammah rivulet with any other; but says, that "it is conducted in a *number of subdivisions* through the gardens, and united again," after which it directs its course, &c. If it is of bulk enough to allow of these subdivisions, and after losing so much by the operation, as it

⁹ The well known small river that passes on the east of the city of Oxford, and unites with the Isis.

Lucan's description of the river Triton (be it where it may) is that of a spring or fountain merely.

necessarily must, it still preserves its character of a rivulet, it cannot be *very* small. Nor is it necessary, on the score of *celebrity*, to have been a large stream : small fountains being by the ancients equally celebrated with large rivers ; perhaps more so, from a more intimate connection with religious worship : and we may suppose that its warmth, and medicinal qualities, may have contributed more immediately to its fame. But Dr. Shaw allows it to be of magnitude enough to be *mistaken* for the *Tritonis*, by what he says, in p. 213.

Herodotus and Pliny certainly conduct the river Tritonis into the lake of the same name : but Ptolemy stands alone in calling *that* the river which leads from the *lake* into the *Syrtis* : possibly, on a supposition that the lake was fresh. Herodotus, Melp. 178, says, the Machlyes “ extend as far as a great stream called the Triton, which enters into an *extensive lake* named Tritonis, in which is the island of *Phla* ¹.” Of course, the river should run into the lake, not into the sea. And as it appears (in 180), that the temple of Minerva was situated amongst the Machlyes, it should have been on the *east* side of the lake, which would agree also to the position and course of the rivulet of El Hammah.

Pliny says, lib. v. c. 4, after speaking of the Philænian altars, “ Near to them the great lake, denominated from the river Triton, receives into it *that*

¹ In this place he represents the *river* Triton as the boundary ; but in 180, the *lake* itself. There is perhaps but little difference. This is Mr. Beloe’s translation : Littlebury puts the river in both cases.

river. But Callimachus calls it *Pallantias*, and places it on *this* side the Lesser Syrtis, though many place it *between both*." Thus Pliny, evidently, was doubtful of the *situation* of the river *Triton*, although he knew the relative circumstances of the *lake* and *river* to each other.

In effect, the ancients, as Dr. Shaw justly observes, p. 213, seem to have described this quarter from report, or uncertain information only²; and, therefore, we are hardly to expect consistent, much less critical, descriptions. They appear, however, to have furnished us with very good grounds for believing that the Syrtis and lake Tritonis communicated in former times; and that the communication continued even to the time of Ptolemy. We think it equally probable, that the river Triton flowed into the lake: and that the island, called by some, Triton, by Herodotus, Phla; together with the temple of Minerva, (in which the *Triton* is said to have deposited *Jason's tripod*³), was situated near the mouth of it: moreover, that the island in question is now a part of the sandy plain, in which the rivulet of Hammah, the supposed river of Triton, loses itself. For it appears to us, that the difference between the present state of things at this place, and the ancient description of the lake and Syrtis, may be reconciled, by merely adverting to the changes

² Possibly, with an exception to Scylax, as a professed guide to others. The observations of Polybius would probably have saved us much conjecture, had they come down to us.

³ Melpom. 179.

that have taken place on other sandy shores; and more particularly at the head of a gulf, where the tide exerts its *greatest* power of casting up the sand to a higher point. That which has happened at the head of the Red sea, may be adduced in point; and as the shore of the Syrtis is much flatter than the other, the operation has probably gone on with greater rapidity ⁴.

Of the ÆGIS and TEMPLE of MINERVA, at the Lake TRITONIS.

Herodotus and Scylax both speak of a temple of Minerva at the lake Tritonis: the first, not positively indeed, but by such strong implication as to induce belief ⁵; but the latter positively, in page 49.

Herodotus informs us, that the *lake Tritonis* forms the boundary between tribes of different manners and occupations; those on the east being *shepherds* and *Nomades*; on the west, *husbandmen*. Melp. 186, 187, 191. Of course, that lake is a very marked boundary: and the two nations or

⁴ See above, page 90.

⁵ Herodotus says, "It is pretended that *Minerva* was the daughter of *Neptune*, and the divinity of the lake *Tritonis*." (Melp. 180.)

"The *Machlyes* at the lake *Tritonis*, have an annual festival in honour of *Minerva*." (Ib. 180.)

"A Triton placed the *tripod* obtained from Jason, in his temple." This was at the lake of Tritonis. (Melp. 179.)

tribes separated by the lake, are the *Machlyes* on the *east* ; the *Auses*, or *Ausenses*, on the west.

It was amongst the *Machlyes* that *Minerva* was particularly worshipped ; Melp. 180 ; whence, we should infer, of course, that her temple stood on the *eastern* side of the lake⁶ ; as we have observed in the last Section.

Again, Herodotus observes, in 188, speaking of the Africans on the *west* of the lake, “ the only deities to whom they sacrifice, are the *sun* and *moon*, who are adored by *all* the Africans ; they who live near lake Tritonis venerate *Triton*, *Neptune*, and *Minerva* ; but particularly the last.”

“ From these Africans (continues he), the Greeks borrowed the *vest* and the *Ægis*, with which they decorate the SHRINE of *Minerva* : the vests, however, of the *African* *Minervas*, are made of skin, and the fringe hanging from the *Ægis* is not composed of

⁶ “ They have (says the Historian, Melp. c. 180,) an annual festival in honour of *Minerva*, in which the young women, dividing themselves into two separate bands, engage each other with stones and clubs. These rites, they say, were instituted by their forefathers, in veneration of her whom we call MINERVA ; and if any one die in consequence of wounds received in this contest, they say that she was no virgin. Before the conclusion of the fight, they observe this custom : she who, by common consent, fought the best, has a *Corinthian helmet* placed upon her head, is clothed in *Grecian armour*, and carried in a chariot round the lake. How the virgins were decorated in this solemnity, before they had any knowledge of the Greeks, I am not able to say ; probably they might use Egyptian arms. We may venture to affirm, that the Greeks borrowed from Egypt, the *shield* and the helmet.”——

serpents, but of leather ; in every other respect the dress is the same : it appears by the very name, that the robe of the statues of Minerva was borrowed from Africa. The women of this country wear below their garments *goat-skins*, without the hair, *fringed*, and stained of a *red colour* ; from which part of dress, the word *Ægis*⁷ of the Greeks is unquestionably derived." Melp. 189. Here he must be understood to mean the people on the *east* of the lake ; because it appears by the paragraph which follows (190), that he was speaking of *African Nomades* ; who, by his own account, were confined to the east side of the lake of Tritonis. (186).

The circumstance of the dyed goat-skins is curious, and shews the antiquity of the art of dressing skins in Africa, an art that has always, or at least till very lately, been executed with greater skill *there* than in Europe.

It appears from the Scriptures that *rams'-skins dyed red*, formed a covering for the *tabernacle* in the wilderness, in the days of *Moses*, near 1500 years before Christ⁸ : and we may be pretty confident that these were *brought out of Egypt* by the Israelites, for it happened early in the very first year of their wanderings ; and it is not very probable that the skins could be collected in the wilder-

⁷ "From *αἴς αἰγός*, a *goat*, the Greeks made *αἰγίς αἰγίδος*, which signifies both the *skin* of a *goat*, and the *Ægis* of *Minerva*." Mr. Beloe's *Herodotus*, Vol. ii. 346, note.

⁸ Exodus, ch. xxv. ver. 5 ; ch. xxxv. ver. 7 and 23 ; and xxxvi. ver. 19.

ness. We are told that the Israelites borrowed of the Egyptians not only *gold, silver, and raiment*, but also “*such things as they required; so that they spoiled the Egyptians*”⁹. Now amongst the offerings we find *blue, and purple, and scarlet, and fine linen, and goats’ hair*¹⁰, (besides the *red skins* before mentioned), all of which they must surely have taken from the Egyptians; and by the use to which these skins were applied in the wilderness, we must suppose them to have been considered as an elegant luxury in Egypt, from whence doubtless they were brought.

Whether they were manufactured in Egypt, or otherwise, cannot be known; but the contrary is the most probable, not only because the animal which produces the skin seems to be a native of the Libyan provinces, but because the manufacture is at this day in the greatest repute there. And as the *Fezzaners* at present fetch them from the centre of Africa, so might the Egyptians of old: and Mr. Maillet informs us (p. 199), that *moroquins*, meaning the dyed skins of Western Africa, are amongst the articles imported into Egypt in modern times¹¹.

⁹ Ch. xii. ver. 36.

¹⁰ Ch. xxxv. ver. 23 and 26; and xxxvi. ver. 14.

¹¹ We learn from Mr. Beaufoy (Afr. Assoc. 1790, ch. vii. viii. and ix.) that *goat-skins* of beautiful *red* and *yellow* dyes are the produce of the country of Kasseena and the adjoining countries on the south, and are a considerable article of traffick; as also that they are purchased by the Fezzan traders; who, no doubt, distribute them along the coasts of the Mediterranean, and consequently in Egypt.

Dr. Shaw mentions both sheep and goats in the countries of Barbary, p. 241, although he is silent respecting any manufacture of their skins. He speaks moreover of a particular breed of sheep in the neighbourhood of *Gadamis*, *Wurglah*, and other places of the Sahara, which are nearly as tall as our fallow deer, and with fleeces as coarse and hairy as those of goats. He speaks, however, from information only. Pliny, lib. viii. c. 50, says that the goats about the *Syrtes* are shorn like sheep. Goats' hair is mentioned as one of the *offerings* in the wilderness: this, too, was probably brought from Africa; and here we are even told where it was produced.

Abulfeda informs us of a celebrated manufacture of dyed skins in *Gadamis*, probably of the very kind described above by Dr. Shaw; for speaking of *Gadamis* (concerning which see above, page 284), in his account of Africa, Tab. III. he says, that "the people of *Gadamis* are celebrated for preparing of skins." But he gives no particulars, a defect we have often occasion to remark. It is proper to remind the reader, that *Gadamis* is situated in the same quarter with the lake of *Tritonis*, or *Lowdeah*, where the dyed skins were in use at the temple of *Minerva*.

It is doubtless a curious fact, that the tabernacle of the DEITY in the wilderness, and the shrine of *Minerva* at the lake *Tritonis*, should have been decorated, not only with the same *kind* of manufacture, but that also of the same *colour*. We know not the date of the custom in Africa, but it was clearly ante-

rior to the invention of the Grecian *Ægis*, so that it carries us back to a very high period of antiquity, perhaps not far short of that of the institutions of Moses.

The modern state of this manufacture in Africa, and more particularly in the quarter assigned to the temple of Minerva, furnishes a strong presumptive proof of a curious fact adduced by our Author : and if, as appears probable, the skins mentioned in Exodus were brought from Africa¹¹, we are furnished with another curious fact in the history of manufactures ; for in that case the manufacture must have existed in the same quarter about 3300 years : and even if the Greeks borrowed the *Ægis* from the Minerva *Tritonia*, or any other of the African Minervas, it gives a duration of about 3000 years to the manufactory.

¹¹ The Egyptians, from the nature of their country and habits of life, are more likely to have drawn this article from Africa, than to have had it amongst themselves ; and the system of supplying themselves from Africa, as at present, has probably existed from the earliest times.

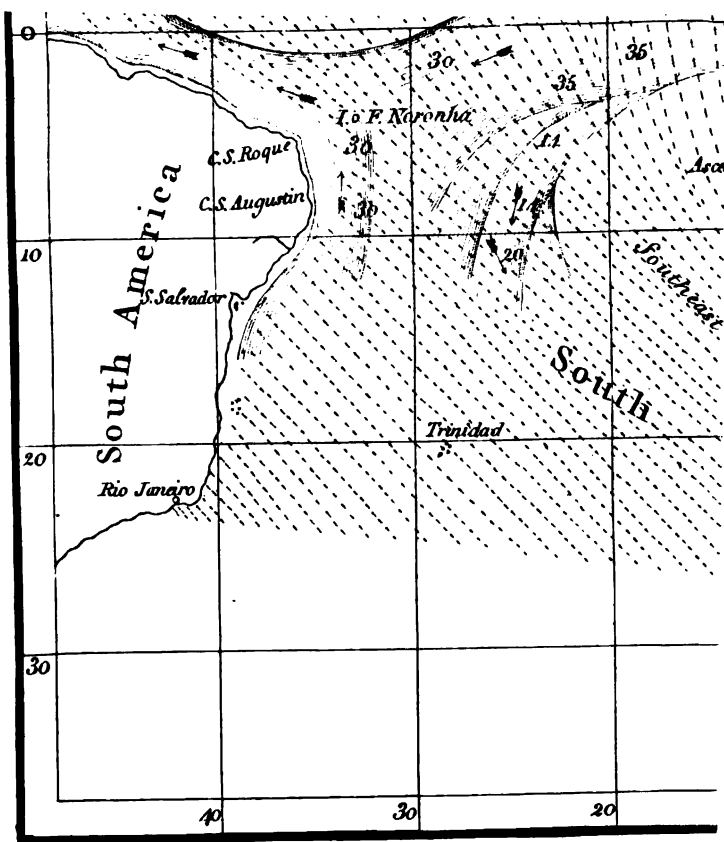
SECTION XXIV.

CONCERNING THE CIRCUMNAVIGATION OF AFRICA, BY THE SHIPS OF PHARAOH NECHO, KING OF EGYPT.

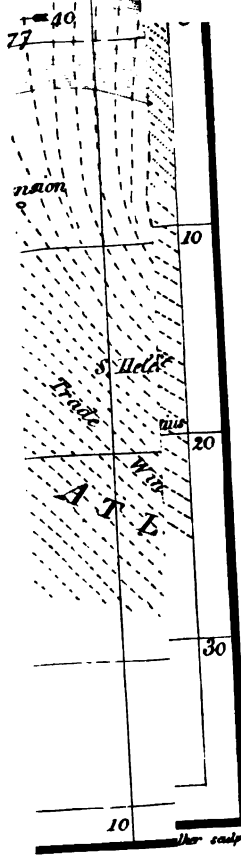
The ancient Authors divided in Opinion, respecting the Fact of the Circumnavigation of Africa—Believed by Herodotus and Pliny; but doubted by Strabo, Polybius, and Ptolemy—General belief of a Communication between the Atlantic and Indian Seas—Probability of the Circumnavigation having been performed—Slow rate of sailing of ancient Ships, with some of the supposed Causes—Time required to surround Africa, at that rate of sailing—Brief Description of the Voyage set on foot by Pharaoh Necho—The Naval Power of Egypt at that Period increases the probability of the story—The Ancients had an early knowledge of the coasts of Africa, as far as Guinea and Sofala—The subject illustrated by a reference to the Portuguese and Spanish Voyages of Discovery in the 15th Century; those of the Portuguese, prompted by the Information communicated by the Arabian Geographers: that of Columbus induced by a prodigious Error in the existing Systems of Geography—Globe of Nuremberg—Proof that the Arabs knew the general Extent of Africa so early as the 14th Century, at least—Monsoons and Seasons in the Indian Ocean, known to the Phoenicians and Egyptians—Date of the Enterprise¹.

It was a matter of undoubted belief with Herodotus, that Africa had been circumnavigated, for he not

¹ The reader is referred to the Map No. X, opposite to this



zjador
zs Major



only gives a short history of the navigation itself, undertaken by order of Necho (or Pharaoh Necho), and accomplished by the aid of *Phœnician* mariners; but in a *second* place remarks, that the Atlantic, the Indian, and the Mediterranean seas, formed but ONE OCEAN: and moreover, in a *third* place, says that Xerxes commuted the capital punishment of an individual of high rank into that of sailing round Africa. And as no guilt is imputed to the ships' crews so employed, we must suppose that the measure was *deemed*, and perhaps was *known*, to be practicable, although difficult and tedious.

We cannot conclude any other, than that Herodotus was then addressing himself to a people who believed in the truth of the discovery, and may suppose that he collected the particulars concerning it during his residence in Egypt, about 175 years, or less, after the discovery, and whilst it remained fresh in the minds of the people at large ².

Nor was Herodotus the only author of antiquity, amongst those whose works have come down to us, who believed that Africa had been sailed round; for

Section, for explanations respecting the navigation, and the direction of the general winds and currents.

² We observe in a French literary journal lately published, that M. Gosselin has given a decided opinion that the ancients never went more than 180 leagues to the southward of the strait of Gibraltar; that is, short of Cape *Bajador*. Can we doubt, then, the truth of the representations of the Senegal and Gambia rivers, in Ptolemy; or of the coast, to about the length of *Serra Leona*? Or the notices concerning the river Gambia (*Bambotus*) in Pliny?

Pliny believed that it had been achieved by Hanno, Eudoxus, and others, but he is silent concerning the voyage of Necho, whence it may be suspected, that, as this navigation was made much about the same time with that of Hanno, Pliny may have confounded them together, referring the actions of the *Egyptian* to the *Carthaginian*.

It is equally remarkable that Herodotus appears to be ignorant of the voyage of Hanno, unless he, in turn, may be supposed to confound it with the *trading voyages* noticed by him, of the Carthaginians to the western coast of Africa.

Pliny says, lib. v. c. 1. "that Hanno, a great commander amongst the Carthaginians, during the most flourishing times of Carthage, was directed to explore the *whole extent* of the coast of Africa." And, lib. ii. 67, "that Hanno sailed round from Gades to the utmost extent of Arabia, and wrote an account of the voyage; at which same time Hamilcar was sent to discover the remote coasts of *Europe* ³."

In the same place he relates from Cornelius Nepos, "that, in *his* time, Eudoxus, a great mariner, sailed

³ It may be suspected that Pliny had never read the journal of Hanno itself, but took his ideas of it, either from extracts, or the comments, or remarks of others. Otherwise, how could he have been mistaken so far as to suppose that Hanno had *sailed round Africa*? or, as to disbelieve the fact of his founding of cities on the coast of Africa? lib. v. 1. Probably he collected his ideas from Xenophon of Lampsacus, as he quotes him, respecting the *Gorgon*, or *Gorillean* women, whom Hanno is said to have killed and flayed, and whose skins were hung up in a temple in Carthage. These were, in effect, a species of baboons, concerning which more will be said in a succeeding Section.

from the *Arabian* gulf to *Gades*." Lib. v. 1. Pomponius Mela has preserved the same fact ⁴. Lib. iii. c. 10.

It is equally certain that Eratosthenes *believed* (and perhaps *knew*, from circumstances) that Africa was surrounded by the ocean (Strabo, p. 56), as also that Strabo believed it, but doubted the fact of its having been sailed round. His idea was, that Africa formed a triangle, the *base* of which extended along the Mediterranean sea, and whose vertex was situated at no great distance beyond the fountains of the Nile. P. 825, 826. Thus he conceived that the western side was straight, or rather concave, instead of swelling out; as also that the Mediterranean lay nearly in the direction of the *parallel*, and the Arabian gulf, as near to the *meridian*; consequently he must have supposed that the western side of Africa lay in a *south-easterly* direction ⁵.

Lastly, Scylax, p. 55, says that it was an opinion with some, that *Libya* was a *peninsula*.

However, we do not mean to conceal, that others of the ancients either doubted, or totally denied the fact. We shall mention as the most respectable of that class, Polybius and Ptolemy. The former, who

⁴ This was something more than a century before our era. Eudoxus was in the service of *Ptolemy Lathyrus*, king of Egypt.

⁵ It was the opinion of most of the ancient geographers, in which they have been followed by the Arabians, that the coast of Africa, from about the termination of mount Atlas, trended to the south, or eastward of south. None suspected its swelling out 12 degrees nearly, beyond the straits.

it appears, had been employed by Scipio Africanus the Second, called also Æmilianus, in a voyage of discovery, or observation, and had penetrated, at least, to the point from whence Hanno returned, (about *Serra Leona*) says, "It has never been known with any certainty, whether Ethiopia be a continued tract, extending to the south, or whether it be surrounded by the sea." Lib. iii. 4. The infirmities of human nature might induce him to hope that no one had gone farther than himself: for certainly, a voyage to *Serra Leona* makes no figure when compared to the circumnavigation of *Africa* ⁶.

Ptolemy not only denies the junction of the *Atlantic* and *Indian* seas, in which almost all the rest are agreed, however they may doubt of a circumnaviga-

⁶ Pliny relates, lib. v. 1, that *Polybius* the historian had been sent by *Scipio Æmilianus*, during his warfare in Africa, with a fleet to discover the coasts of that continent: and that many particulars of this discovery were committed to writing. (As neither this description, nor that of the *Syrtes*, or of *Cerne*, quoted by Pliny, lib. vi. 31, from the same author, is to be found amongst the remains of his works, we must suppose that they once existed, but are lost.) Pliny speaks of this voyage in an obscure manner; but it may be collected from the circumstance of the hill or mountain, called the *Chariot of the Gods*, (mentioned also by Hanno,) that the voyage of Polybius was continued to about the same extent, with that of Hanno: that is, to the neighbourhood of *Serra Leona*.

Polybius himself, doubtless, alludes to this voyage, when he says, "I have exposed myself to great dangers and fatigue, in traversing Africa, Spain, and Gaul, and in *making voyages* on the *exterior* sea (the Atlantic), by which this part of the world is bounded; that we might be able to correct the mistakes of former writers," &c. Lib. iii. c. 6.

tion having been effected, but by his system, shuts them completely up from each other, by giving such a direction to the opposite coasts of Africa, as to make them diverge from each other; instead of converging as others did.

Since so many of these authorities concur in the belief that Africa had been sailed round, we cannot readily guess why it should be doubted at present; unless the moderns wish to appropriate to themselves all the functions and powers of nautical discovery. Few persons, we presume, are inclined to doubt that voyages were undertaken by the Phœnicians, to Britain, for tin; by Hanno, to the western coast of Africa, for the purpose of establishing colonies, and to discover new lands; by Scylax, from the Indus to the Red sea, to explore the intermediate coasts; and by Nearchus, from the Indus to the Euphrates for the same purpose. And to this list, may well be added the voyages made at a yet earlier date than any of the others, by the fleets of Solomon and of Hiram, to *Ophir* and other places, for gold, ivory, &c.: voyages, some of which, in point of duration, are said to have equalled that of Necho⁷.

⁷ It seems to be past a doubt, that two distinct kinds of voyages were performed by these fleets: that to *Ophir*, from the Red sea; and to the coast of *Guinea*, from the Mediterranean. The reader may convince himself of this fact, by attending to 1 Kings, chapters ix. ver. 26; and x. ver. 22: and also to 2 Chron. ch. viii. ver. 17; and ix. ver. 21. Although gold made a part of each return, yet some of the other articles differ in one fleet, from those in the other. See also Josephus, Antiq. lib. viii. ch. 7.

It is difficult to fix the place intended by *Ophir*. Bruce, per-
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Now as the difficulties of coasting voyages do not, in respect of their length, increase beyond arithmetical proportion, what should have prevented Scylax, Hanno, or the Phoenicians, from extending their voyages, had their employers been so inclined, and preparations had been made accordingly? It is certain that the detailed voyage of Nearchus, and other histories of ancient navigations, shew that the ships of those times advanced at a remarkably slow rate: and Nearchus slower than almost any other; perhaps, because his fleet was in a great part composed of vessels that were ill calculated for sea voyages; being such merely as could be procured: for his equipment was in some degree casual; and therefore, doubtless, in many respects deficient. Nor does it alter the case that a *part* of his fleet was composed of *long* ships, built for the purposes of war and distant voyages; for the rate of the slow goers must necessarily have determined that of the whole fleet.

However, the disadvantages of delay might be compensated by security; as the nature and construction of those vessels were such, as to enable them to procure shelter in most situations. The difficulty of procuring provisions in long voyages

haps, may be right in supposing *Sofala*, in despite of his errors and blunders respecting the monsoons, &c. The Author has a tract on this subject, but he forbore to insert it, in a work already much too bulky.

The Phoceans are said, Clio, 163, to have been the first of the *Greeks* who made long voyages: but these appear to have been confined to the Mediterranean and the coasts of Spain.

along hostile shores, appears the most arduous part of the task ; and it was morally impossible to store those vessels with provisions for such long intervals as are described. But when we read of voyages of *two* and *three* years, both in sacred and profane history, we ought to suppose that suitable arrangements were made to meet the exigencies of the occasions, although we may not be able to guess the mode of accomplishing them !

Herodotus, indeed, comes directly to the point, by saying that the vessels of Necho waited in Libya, the ripening of a harvest, from grain which they *themselves had sown*. This account, we have no doubt, will be discredited by many ; from the obvious difficulty of pursuing the whole process undisturbed, even in a climate where the interval between seed time and harvest, is only three months. We shall say no more, than that we are unacquainted with the particular habits and œconomy of the navigators of that day : that they had plenty of time allowed them to perform their navigation in, had they even waited *two* harvests, instead of the *one*, which the history records. It may, however, be remarked, without attempting to defend the truth of the assertion absolutely, that such an idea, as that of travellers depending in some shape on a harvest of their own, is not confined to this instance alone ; for amongst the preparations made by Tamerlane for his march to China, in 1405, there were waggon-loads of *seed corn*, to sow the fields on the road. See Sheref. Timur, Book vi. c. 28 ^a.

^a As also, a vast number of *she camels*, for milk. A gentle-

We have collected a number of examples of the rate of sailing, of the ships of the Phœnicians, Grecians, and Egyptians; that is, of the best managed and best constructed ships of those days; as also a number of particulars respecting that part of their œconomy, which relates to sheltering themselves, and communicating with the shore; in order that we may have before us sufficient *data*, to determine the rate of movement, and a general idea of their mode of navigating⁹.

man who has been at Morocco, reports that the horses in the Tombuctoo caravans, are often fed with the milk of camels.

⁹ 1. "Miltiades, under *favour* of an *easterly* wind, passed in a single day from *Elæos* in the *Chersonese* (of Thrace) to *Lemnos*." Herodotus, Erato, 140. The distance is 38 G. miles only.

2. The fleet of Xerxes sailed in three days from the *Euripus* to *Phalerus*, one of the ports of *Attica*. *Urania*, 66. This is about 96 G. miles, or 32 per day. The fleet was unusually great.

3. Nearchus reckoned the promontory of *Maceta* a day's sail from him, when he first discovered it; and it is shewn by circumstances, that the distance was about 38 G. miles. (Arrian's Voyage of Nearchus.)

4. Scylax allows $75\frac{1}{4}$ days for the navigation between *Canopus* and the Pillars of Hercules; equal to about 32 per day. (Periplus of Scylax, p. 51.)

5. The Red sea is 40 days of navigation. *Euterpe*, 11. The track which a ship must necessarily make through it, is about 1300 G. miles, or less; so that the rate may be taken at 32 per day.

6. The Euxine, is said by the same Author, *Melpom*. 186, to be 16 days' navigation, from the *Bosphorus* to the *Phasis*; producing about 38 per day. He says, indeed, nine days, and eight nights; which, according to his own rule, given in the same place, is equal to 16 days.

It is conceived that the fact of the slow progress will be readily admitted; since, in addition to so many other examples, we have the reports of Nearchus and Herodotus; the first, respecting the length of a day's sail; the latter, the space actually sailed through, in the course of a day, and remarked as an

7. The *Caspian* sea is said, by the same Author, Clio, 203, to be 15 days' navigation, for a *swift rowing* vessel: and being about 630 miles long, this allows a rate of 42.

8. Pliny, lib. vi. 23, says, that it was 40 days' sail from the outlet of the Red sea, to the coast of *India* (Malabar), which is about 1750 G. miles, equal to 44.

(He also reckons it 30 days' sail from *Berenice*, to the outlet of the Red sea: this would give about 30 per day only.)

Mean of the 8 examples 37

Mean of the 6 first, which may be reckoned the fairest and are most to the purpose 35

§ We may add, that the mean rate of Nearchus, was no more than $22\frac{1}{2}$, during his whole voyage; and less than 30, through the Persian gulf. But we regard his rate as unusually low, for the reasons above stated.

It appears from Procopius (Vandal War, lib. i. c. 12.) that the fleet of Belisarius was 16 days on its passage from *Zante* to *Caucana* in Sicily. The distance being about 320 G. miles, gives 20 such miles per day, or about 250 stadia. This must be regarded as the effect of the oars, generally, there being very little wind, or almost a continued calm.

Diodorus, lib. v. c. 2, says, that tin was carried across, in four days, from Britain to Gaul, where it was landed, and carried across to the mouth of the Rhone, in 30 journees. From the descriptions, and the circumstances altogether, it appears to have been embarked at St. Michael's Mount, in Cornwall, and landed near the other mount of the same name, in France; perhaps at St. Maloes. This would give a rate of about 40 miles per day. But he says that the western promontory of Britain is four days' sail from the opposite continent.

uncommon *long run*, in those days : as also the time required to navigate the Red sea and the Euxine : the latter of which appears to be reported from Herodotus's own experience. In effect, none of them differ materially from the rest. The mean of *all*, then, being so low as 37 G. miles, we are naturally led to inquire why there should be so great a disproportion between the sailing of ancient and modern ships ; since a day's sail (of 24 hours) of a modern ship, cannot be reckoned at less than *three times* that of the ancient ones ? Even the worst description of modern vessels, of which we have any knowledge, seems to be superior to the ancient ones in respect of their *daily* progress ; and therefore we suppose that some cause is to be looked for, besides merely that of dulness of sailing. That this had a considerable share in the delay, is evident from the circumstance mentioned by Pliny (if we may depend on his numbers) of the Roman ships sailing no more than about 44 G. miles per day across the open sea, between Arabia and India, in which we cannot suppose them to have absolutely stopped at night, as in their coasting voyages, and in soundings. We may reckon, at a medium, 13 to 14 hours of daylight throughout the year, in that parallel ; so that 3 miles per hour for the daylight, makes up the whole sum, (bating 3 or 4 miles), which is a very slow rate of sailing before the brisk monsoon that prevails in that sea ; and leaves little or nothing for the night : and although it is possible, or even probable, that they may have *lain to*, during that interval, yet 10 or 11 hours *drift*, must amount to something.

However, we shall not lay so much stress on this instance, (being a solitary one of the kind) as on the others, in the coasting navigation. In these, it appears almost certain, that the ordinary mode of sailing, was confined to daylight; for without a compass, or a substitute for it, great danger must have been incurred, in the night, where a small error in the angle of the course would be fatal. Light-houses on prominent parts of the coast, would doubtless direct them, but this could not be a general arrangement, and must have been confined to particular coasts only. Notwithstanding, sailing by night was doubtless practised occasionally, as in clear moonlight, or at other times, when necessity pressed. For, in the case of Nearchus, it was done more than once, when he was assisted by a pilot, and on a pretty straight coast; and perhaps by the aid of moonlight also. But then, famine pressed; or the nature of the shore, as at the mouths of the Euphrates and Tigris, prevented his coming to an anchor, or landing.

Sailing by night is also implied, where Scylax admits *nights* as well as *days*, in his calculation of the distance between Carthage and the Columns of Hercules; a navigation by no means intricate, and perhaps assisted by light-houses, or signal fires. It must also have been occasionally practised in the Euxine. See note to page 356, article 6.

In effect, then, we must suppose a rate of sailing, of only $2\frac{1}{2}$ *sea* (or geographic) miles per hour, or less than 3 at the utmost. The cause might either be the defective form of the ship's hull, or the faulty

disposition of the cargo or ballast, which might not permit them to spread sail enough. Certainly, the sails of ancient ships are represented on medals, as being remarkably small, and do not seem to be on a par, in that respect, even with the Chinese junks : which, like the others, have generally *lower masts* only.

If we reject the examples given by Herodotus, on the Caspian sea ; and by Pliny in the open sea, as being both out of rule ; we have 35 only, for the mean rate per day, of the Grecian, Egyptian, Phœnician, and Carthaginian ships, between the time of Darius Hystaspes and Alexander generally, and in which none rise above 38, or fall below 32, sea miles.

Now the distance from Suez, at the head of the Red sea, to the mouth of the Nile, round Africa, coastwise, may be about 224 degrees of a great circle : and if we allow 23 miles per day as a mean rate of sailing, since 38 appears to be a rate greater than ordinary, for a single day ; and as there are foul winds, and delays of various kinds to be taken into the account, such as procuring water and provisions by the way ; the former of which may be regarded as a constant care, and practised whensoever an occasion offered¹ ; it appears that 585 such sailing days, or say $19\frac{1}{2}$ months, would be sufficient for the performance of the voyage. And if to this

¹ For instance, Nearchus records, as an unusual circumstance, his taking on board *five* days' water at the river *Arosis* ; because he would not be able to land at the mouths of the *Susian* and *Babylonian* rivers. (Arrian's *India*.)

we add a twelvemonth more for the harvest, for repairs of the ships in different ports, and for rest and refreshment, we have an aggregate of no more than two years, and somewhat more than half of the third year, which comes within the time specified. However, we do not by any means intend to commit ourselves in an opinion respecting the *æconomical detail* of voyages, for which there appear no *data* to guide us ; but which voyages, notwithstanding our ignorance of the detail, it may have been very possible to execute.

Herodotus's short narrative of this remarkable transaction is as follows :

“ Except in that particular part which is contiguous to ASIA, the whole of AFRICA is surrounded by the sea. The first person who has proved this was, as far as we are able to judge, NECHO, king of EGYPT. When he had desisted from his attempt to join by a canal the Nile with the Arabian gulf, he dispatched some vessels, under the conduct of *Phœnicians*, with directions to pass by the Columns of Hercules, and after penetrating the *northern* ocean, to return to Egypt. These Phœnicians, taking their course from the Red sea, entered into the *southern* ocean : on the approach of autumn they landed in *Libya*, and planted some corn in the place where they happened to find themselves ; when this was ripe, and they had cut it down, they again departed. Having thus consumed *two* years, they in the *third* passed the Columns of Hercules, and returned to Egypt. Their relation may obtain attention from others, but to me it seems incredible, for they affirmed, that having

sailed *round Africa*, they had the sun on their *right hand*.—Thus was Africa for the *first time* known." Melpomene, 42.

The enterprising spirit of *Necho* is further marked by historians. Besides his commencing the canal above-mentioned, and which he is said to have discontinued, because admonished by an oracle, he built ships of war in *both* seas (Mediterranean and Red sea); his fleets were occasionally employed, and vestiges of his naval undertakings were still to be seen in the time of Herodotus². He marched through Palestine and Syria to attack the Assyrians near the Euphrates; and in his way defeated and slew the king of Judah (Josiah) who opposed his *march* at Megiddo³. Defeating also the Assyrians (or Babylonians) he took *Carchemish*, a large fortified city on the Euphrates, and placed in it a strong garrison⁴: and in his way homewards, took possession of JERUSALEM⁵, which Herodotus names *Cadytis*, and de-

² See Euterpe, 158, 159. How his fleets were employed, we are not told. The voyage of discovery, no doubt, is one of the services alluded to.

³ 2 Kings xxiii. ver. 29. Euterpe, 159.

⁴ *Carchemish* is doubtless intended for *Circesium*, now *Kar-kesia*, in ruins. It is a pass into Mesopotamia, from Syria; situated at the conflux of the rivers Kabour and Euphrates. For *Carchemish*, see 2 Kings xxiii. ver. 29; and 2 Chron. xxxv. ver. 20. Procopius describes it in his Persian war, lib. ii. c. 3: and Amm. Marc. lib. xxiii; who says it was fortified by Dioclesian. When Xenophon passed that way, there seems not to have been any town or fortress. Anab. lib. 1.—He calls the Kabour the *Araxes*.

⁵ 2 Chron. xxxvi. ver. 3 and 4. Euterpe, 159.

scribes as a considerable city, equal to the size of Sardis. We may estimate the naval strength of Egypt, about this period, by the wars entered into with the Tyrians and Sidonians, by Apries⁶, who succeeded to the throne six years only after the death of Necho. He took Sidon, and reduced Phœnicia and Palestine generally.

Thus, in respect of naval power and enterprise, the Egyptians appear to have been on a most respectable footing at that day; and, aided by the yet superior skill and experience of the Phœnician commanders, who are said to have conducted the expedition, every success might naturally have been expected from their joint efforts.

It would be idle to suppose that a voyage of this extent had been undertaken without a previous knowledge of the positions of the coasts of Africa, as well in the Atlantic as in the Indian ocean, to a very considerable extent southward: on the contrary, we should rather conclude that it was *such* a state of knowledge alone, (and of which we trust we have given sufficient proofs) which dictated the measure. Moreover, it may be supposed that the people of Africa communicated with each other by *caravans*, at that day, as they do at present, in some degree at least; whence some general ideas of the *extent*, if not of the *form* of the continent, must have been collected by the Egyptians, who were not only a commercial people, but had, as we have seen, in

⁶ Euterpe, 161: and Diodorus, lib. i. c. 5. Apries is the Pharaoh Hophra of Jeremiah, ch. xlv. ver. 30.

earlier times, extended their conquests into Ethiopia, and were by no means a people who wanted curiosity. It is probable, therefore, that no part of Africa remained unknown, save that which is at present the *least known* to Europeans ; and that is the part beyond the mountainous *belt* which runs across it, about the height of the sources of the Nile. It is also to be supposed that this knowledge existed, even before any progress was made in exploring the coasts of the ocean.

In effect, we conceive it to be probable, that the Phœnicians and Egyptians had, at different times, explored the shores of this continent, as far as the coast of *Guinea* on the one hand ; *Mosambique* and *Sofala* on the other ; before even the idea of the great undertaking of the CIRCUMNAVIGATION presented itself. Such partial discoveries on each side of the continent, were likely not only to prompt the inquiry, but to encourage the hopes of the adventurers also ; in the first instance, by extending the sphere of their knowledge on the side from whence they departed ; and by affording a prospect of returning the sooner within it again on the opposite side. And, in our idea, much more probability attaches to the account, from its describing the navigation to *commence* in the *east*, than in the *west* ; since it seems to prove that the determination arose from a *previous experience* of the winds and seasons : for the undertaking would have been a much more difficult one from the west in the *then* state of navigation than from the east, as will be shewn in the sequel.

The progress of the Portuguese discoveries of this very continent, in latter times, under the patronage and direction of the immortal Prince Henry of Portugal, was consonant to these ideas. The works of Ptolemy would inform the Portuguese that the coasts of Africa were known in his time, as far at least as *Serra Leona* on one side; *Mozambique*, or more probably, *Sofala*, on the other; and although it might remain a doubt, how much farther the continent extended southward, yet Herodotus and Pliny would inform them that it had been circumnavigated; Strabo and others, that the Atlantic and Indian seas formed a junction on the south of Africa; facts, which must have had great weight with those who projected the discovery, even if they had not read the work of Abulfeda.

It is well known that a considerable interval elapsed between the settling of Congo and the discovery of the Cape of Good Hope; as well as that the latter discovery preceded by a considerable interval (that is, about 11 years) the arrival of De Gama in the Indian seas⁷.

The progress of the Spanish discoveries in South America, was exactly similar. That continent was discovered by piecemeal; and the passage into the

⁷ DE GAMA is said to have consumed 13 months in his voyage from Lisbon to the hither part of India, although ships very commonly go from London to the Ganges, in four months, in the present times. Therefore the difference in the length of the voyages, between the ancient navigators and De Gama, is not more striking than that between De Gama and the navigators of our times.

south sea by the strait of Magellan, not till very long after the coast had been explored to the parallel of 35° S, which was itself effected within 10 or 11 years after Columbus's first discovery of the Bahama islands.

It is not, perhaps, so universally known, that the splendid discoveries of COLUMBUS were prompted by a geographical error of a most extraordinary magnitude, which placed the farther extremity of Asia, at so great a distance to the east, as to encourage a hope of reaching it more speedily by the west. This error amounted to no less than *one hundred and fifty degrees* of longitude; as appears by the famous globe of Nuremburg, made, by Martin Behaim, in 1492, the date of Columbus's voyage. Nay, some at least of the geographers of that time believed that Columbus's new discovery was really a *part* of *Asia*; for, in a map made early in the 16th century, it is joined to the eastern extremity of that continent. Errors have seldom been productive of so much good; but it has happened in some other instances, that ignorance of impending difficulties, and of the labour to be encountered, has ultimately occasioned success, in the most difficult enterprises*.

Even the system of Ptolemy, exceeds in longitude,

* The Nuremberg globe allows no more than about 90 degrees of west longitude between Ferro and the eastern part of India; which is rather 240. Between Ferro and *Cathai*, Ferro and *Cipangu*, (meant for northern part of China and Japan), he allows only 70 degrees; but they are, respectively, 220, and 200: consequently, the general error is 150 degrees; or 10 hours of the 24, in time.

one third of the truth, between Cape St. Vincent and the western part of China. This error may be estimated at about 58 degrees⁹: but the maker of the Nuremburg globe, Martin Behaim, seems to have disdained all bounds; as if he wished to inspire his friend Columbus with the certain hopes of reaching Asia by the *west*: since he allows little more space between Europe and India, *westward*, than there really is between them, in the opposite direction.

However, it is very clear that had not Columbus effected the discovery of America when he did, the Portuguese must, in the course of their voyages southward, and at no great distance of time probably, have fallen in with the coast of Brazil; in which case, *South* America would have been the first part discovered of the *new* continent¹. But these circumstances do not in the least diminish the merit

⁹ Eratosthenes and Strabo, great as their errors are, in parts of their details, are not out more than about 10, and 5 degrees, respectively, in the length of the two continents, in the parallel of Cape St. Vincent and Rhodes; and their errors are of the opposite kind to those of Ptolemy and Behaim. The sentiment of Eratosthenes, therefore, was of a different kind from that of the modern navigator, as being prompted by a different idea of the state of things: for he says (Strabo, 64.) that "if it was not for the vast extent of the *Atlantic* sea (all was *Atlantic* to him, from *west* to *east*) ships might navigate from *Spain* to *India*, keeping nearly in the same parallel; or *find new lands during their course*." See the statement of the distances, as given by the above authors, in p. 225, Vol I. of this work.

¹ The Cape of Good Hope was discovered in 1486; America in 1492; and De Gama sailed round the Cape to India in 1497; so that the discovery of Columbus came between that of the Cape, and the first voyage into the Indian sea.

of Columbus, the plan of whose voyage was entirely unconnected with any other.

The speculation of COLUMBUS, then, was to reach a *known* distant country, by a supposed shorter road than the one which the Prince of Portugal had recently explored. This speculation was not only *deep*, but was also such an one as could receive but little aid in the execution from the preceding labours of others. But Prince Henry was both prompted in the design, and assisted in the execution, by such labours; but to what extent we cannot trace. However, we strongly suspect that he had received the most positive assurances of the extent of the African continent, southward, and of the consequent communication of the *eastern* and *western* seas, from the *Arabians*; and more particularly from the works of Abulfeda.

From what is set forth by this Author, who wrote a century and a half before the Portuguese discovery of the passage round the Cape of Good Hope²; and probably from notices that had existed amongst the Arabs, for many ages prior to the date of his work; it appears, not only that the *fact* of Africa being surrounded by the ocean, was well known in the East, but the *general form* of that continent also. This

² D'Herbelot says, that Abulfeda was born in the year of the Hejèrâ 672, and died in 732. According to the very useful table, which exhibits the correspondence of the years of the Hejèrâ, with those of the Christian era, framed by my friend Mr. Marsden, the above years of the Hejèrâ correspond to 1273 and 1331 of the Christian era.

applies with great force to the Portuguese scheme of discovery, as it can scarcely be doubted, that, even if copies of this author were not found in the libraries, in *Spain* and *Portugal*, yet that at least Prince Henry of Portugal, who had travelled in Mahomedan countries, and had read and inquired so much, with a view to promoting his favourite object of discovery, must have seen them ³.

It appears, however, that Abulfeda's geography was not known in England, in 1583; for we learn from Mr. Newbury (then in *Syria*), that he was commissioned by Mr. Hakluit to inquire after it, but was unsuccessful. Probably his business did not carry him amongst that class of people who were acquainted with such authors ⁴.

Unless we are to suppose, that the knowledge of African geography was more confined, in the flourishing and commercial times of ancient Egypt, than during the Caliphate, we may conceive that the people of that country, and of Arabia, knew generally, during the former period, those facts which are set forth by Abulfeda.

For the same reason as we have extracted from Abulfeda and Edrisi, in a former part of our work ⁵,

³ It is admitted by *De Barros*, that Prince Henry collected much information concerning the continent of Africa from the Arabs, from the people of Fez and Morocco, and from travellers in general. He was himself at the siege of *Ceuta* in 1415, and is said to have brought home with him from Africa, a strong inclination to discover new lands and seas. He was then only in his 21st year.

⁴ Hakluit's Collection of Voyages, Vol. ii.

⁵ That is, concerning the Nile. See p. 47.

we shall here extract from the former, his account of what he styles the *Great*, or *Ambient* sea.

“ It is called the *Ambient* sea, because it surrounds the *whole extent* of the *continental lands*. And hence Aristotle calls it the *Crown sea*, as if it surrounded the earth, just as a crown does the head. In the description of this sea, we shall observe the following method; namely, in setting out from the *western* side, and proceeding thence to the *southern*, and successively to the *eastern* and *northern*, and at last complete the circuit, by returning to the *west*, from whence we set out.

“ The western border, then, of this ambient sea, namely, that which washes Africa and Spain, is called the OCEAN; in which are the Fortunate islands, ten degrees distant from the shore of Africa⁶. Some reckon their longitude from these islands, others from the (western) shore of Africa.—This sea begins to extend itself from the most southern shore of *Mauretania*, till it has passed the Desert of *Lantun*, which is a vast wilderness of barbarians, situated between the borders of *Mauretania*, and those of the various tracts of country, belonging to the

⁶ Here is a proof, amongst others, that Abulfeda thought the coast of Africa lay very much in the direction of the meridian, from the strait of Gibraltar, southward: and this accounts for his idea, that the sea passes at the back of the mountains that give rise to the Nile.

Another proof is, that when he speaks of the mouth of the *western Nile*, intended for that of the Senegal river, he says, that it is situated at 10½ degrees to the east of the Fortunate (i. e. Canary) islands. He perhaps took this general idea of the bearing of the coast from Ptolemy.

Nigritæ. From thence it stretches (yet further) towards the south, along *uncultivated, uninhabited, and unfrequented* countries, until it has passed beyond the *Equator*: after which, it bends to the *east*, behind the mountains *El Komri*⁷, from whence the *Nile* of *Egypt* has its sources. Again, it proceeds southward, and afterwards turns again to the eastern quarter, passing by uncultivated shores, behind the regions of the *Zengitæ*; whence it takes a *north-easterly* course to its junction with the seas of *India* and *China*. It then takes an easterly course, till it reaches the eastern extremity of the continent; that is, the region of *China*; whence it bends northward, and in its progress shuts up the eastern quarter of *China*, till it *faces* the *mound* or *rampart* of *JAJUJE* and *MAJUJE* (*GOG* and *MAGOG*⁸). Thence it bends *westward*, passing by regions of which we are ignorant,—and having passed the territories of the *Russians*⁹, it takes a *SW* direction, and then again *westward*, along the coast of various *Infidel* nations, till it comes opposite to *Italy*, on the west. [Perhaps it should be *north*, as the *German* ocean seems to be meant.] Thence bending *southward*, it washes the countries lying *between* *Italy* and *Spain*¹, which

⁷ That is, the *lunar* mountains, or Mountains of the *Moon*, as they are called by Ptolemy. And it appears from Mr. Browne, that they are really so called in Africa.

⁸ See before, page 201, Vol. I.

⁹ At this time, *Siberia* was not known even to the *Russians*.

¹ *Spain* and *Italy* were better known to the Mahomedans, than the rest of Europe, in general; and *Spain*, particularly, from its having been in their possession. This is, in fact, the only European kingdom particularized by Abulfeda.

having passed, it proceeds to the shores of *Spain*; and finally, having extended itself along its western side, it comes opposite to *Sabta (Ceuta)*, which is situated at the passage or *crossing* place [of the strait of *Gibraltar*] from whence we set out²."

Although this account is satisfactory, in respect of the mode in which the ocean encircles generally the old continent, yet it will be perceived that beyond the western part of it, Abulfeda knew but little.

One particular is striking. He had an idea, in common with the Greeks, that the eastern ocean turned very *short round* to the *west*, after it had ascended to the parallel of Rhodes; for so he describes it. On the north of Europe he is very obscure: and *Siberia*, as we have before observed, was not known at that time to exist; even by the people of Europe.

With respect to *Africa*, we find him extending the great body of it to the *south* of the Equator, *before* it turned to the east, (an error of about four degrees), but as he had placed the sources of the Nile to the south of the Equator, and supposed also that the ocean advanced to the back of the mountains that contained them, he could not well do otherwise. For the rest, as the southerly position of Sofala seems to have been well known, it is not improbable that he might, in idea, allow to Africa the full extent which it is now known to have. We now return to the subject of the circumnavigation.

² See *Prolegomena*, in Reiske's translation of Abulfeda, in Busching's Hist. and Geogr. Mag. Vol. iv. p. 140.

It must be allowed, that such a degree of knowledge as has been supposed, of the two seas which wash the opposite coasts of Africa, would have furnished the ancient navigators with opportunities of acquiring a general, if not a particular, knowledge of the *monsoons*, as well as of the NE trade wind : and although they might not have penetrated so far into the Atlantic, as to have known the SE trade, yet from having experienced a southerly monsoon in the Indian sea, on the south of the equator, they might expect a like wind in the Atlantic, at least half the year.

The want of a substitute for the mariner's compass, is insisted on by many, as having been a prime obstacle to the accomplishment of such a navigation. But we do not view the matter in such a light ; for although it may be admitted as an insurmountable obstacle to the discovery of AMERICA, in the way to which an extensive ocean was to be crossed, yet the voyage in question was a *coasting voyage* ; (although indeed, on a scale very different from those to which the term is at present applied, and nearly appropriated^s.) Nor were the voyages of discovery of the Portuguese, in this quarter, any other than coasting voyages, the only mode in which they could well be prosecuted ; where the object was to trace the coast of a continent, with a view to discover and to double its extremity. So that the discovery of *this* passage might have been effected, had the

^s The voyages of the Phœnicians to Britain, as well as those of Hanno, Nearchus, &c. were doubtless confined very closely to the shore.

magnet never been applied to the compass ; but, in all probability, that of America, never. This, in our idea, is the true state of the matter ⁴. But it is however certain, that the Egyptian and Roman fleets sailed on a *direct* course from the outlet of the Red sea to the coast of Malabar, 1750 miles, without a compass, although it took them up 40 days. They were, however, *certain* of a *fair* wind both in going and returning, for they took advantage of the monsoons : but those who embarked in the American discoveries, had to contend with variable winds, and had also a wider ocean to cross.

We may at least suppose that those Phœnicians who directed the voyage, had their wits about them, like other men, and profited by their knowledge of seasons, obtained during their voyages in the Indian sea, and in the Atlantic ; and though they might be unable to guess the circumstances of things, *further on*, they would not, at least, have made so great a mistake at the outset, as to attempt to sail *against* the monsoon ; since the changes must have been familiar to them : for periodical winds prevail even in the Red sea.

The date of this first circumnavigation of Africa, may be supposed to be about 600 years before our era ; 175 before Herodotus wrote ; and perhaps about 400 after the voyages made by the fleets of Solomon and Hiram.

⁴ It cannot be doubted that the *progress* would have been *expedited* by the aid of the compass ; because by its help, a ship might sail on, during the night, as far as their knowledge extended during the day : whilst, under other circumstances, they must have lain still.

SECTION XXV.

THE CIRCUMNAVIGATION OF AFRICA, CONTINUED.

Supposed Progress of the Voyage, according to known circumstances and the nature of things—Great advantages in favour of a Voyage by the West—Winds and Currents generally favourable the whole way from the Red Sea to the Coast of Guinea—Difficulty respecting Provisions—Current generally adverse along the coasts of North Africa—General idea of the Streams of Current in the Atlantic Ocean—a knowledge of them highly important to modern Navigators—Progress of the Expedition along the Coast of Guinea to Senegal—The Navigators wait a Harvest on the Coast of Libya—Difficulty of the Passage from Senegal to the Region of westerly Winds—Disadvantages of ancient Ships in respect of Capacity for Stowage: Advantages in respect of obtaining Shelter—Facts illustrative of the Economy of ancient Ships; proving that they were generally secured by being drawn up on the Beach—Remarks naturally arising from the foregoing Navigation—Forgotten in Egypt in the time of Ptolemy—A parallel instance in Europe—Voyage of Sataspes to circumnavigate Africa by the East, fails—Carthaginian Voyages of Traffic to the western Coast of Africa—The Narrative of the Expedition of Necho, perhaps discredited by reason of its brevity.

It may be conceived that the Phœnicians employed in this voyage of discovery by Necho, taking advan-

tage of the proper seasons, entered the *Erythræan* (or Indian) sea, during the early part of the *northerly* monsoon ; that is, at the latter end of October, or beginning of November ; when they might be certain of a fair wind, as far as the *southern* tropic ; and also of a strong current in their favour the whole way round the Cape of Good Hope. They might arrive at the southern tropic by the end of January ; that is, in the midst of the summer of the southern hemisphere ; and, of course, during the best time to accomplish the most difficult part of their voyage, the doubling of the southern promontory of Africa ; and overcoming the difficulties of a navigation of more than 20 degrees of a great circle, through a tract of variable winds, and most commonly in winter, a stormy sea also. For this service then, they had a great part of the summer and the autumn before them : and it is to be noticed, that, through the principal and most critical part of this space, the sea along the coast has a regular motion in their favour to the westward or SW ; as indeed had been the case the greatest part of the way from the Red sea, at the season in which they navigated it : although such a circumstance would have been felt of less importance *there*, because of the constant fair wind.

It is a circumstance as generally known, that, in the south Atlantic, from about the 30th degree of south latitude to the equator, or beyond it, a regular SE wind (thence named the trade wind) prevails in the *open* sea ; and, within the influence of the land, a *southerly* wind, varying only some points to the

eastward or westward, according to the season or time of day; partaking, in some degree, of the nature of land and sea-breezes. (This is more particularly the state of things in *April* and *May*.) Throughout this space, then, they would find a *fair* wind, and but little bad weather: and such a wind, as we have said before, it is probable they would, from analogy, have calculated on, at the season in which they might expect to arrive in this parallel in the Atlantic. This is, however, reasoning on the supposition that the Egyptians had the same general idea of the extent of Africa southward, that the Portuguese might have had, previous to *their* expeditions; and which we believe to have been really the case.

Thus far, then, circumstances have appeared to be clearly in favour of a circumnavigation *from the east*, in preference to that from the *west*; the northerly monsoon in the Indian seas, corresponding with the summer of the southern hemisphere; and the wind having at all times an inclination to the southward, along the western coast of Africa, within the same hemisphere, together with a current to the northward for the most part. For, admitting that, in the summer season, the variations of the wind might enable them to *work* down this coast to the Cape of Good Hope (in which perhaps we have admitted a great deal, considering the structure of ancient ships), yet neither could they, in all probability, have borne the buffetings of the storms *there*, when assailed by a strong adverse current at the same time; or have coasted the eastern side of the

continent, with the additional obstacle of an *adverse monsoon*.

At what season they arrived at the equator, it is difficult to guess, as it must have depended chiefly on the delays consequent on the state of the ships, and the facility of procuring water ; and, it may be, provisions also, by the way¹. Had they been able to proceed directly onward, they might probably have completed their navigation to the bay of St. Thomas (beyond the equator) by the middle of July at farthest : that is, allowing two months and a half between their passing *out* of the *monsoon*, and their *entering* the *SE trade* ; and nearly three months more, from thence to the bay before-mentioned². But the probabilities are, that they arrived there very much later ; and had they arrived ever so early, the navigation to the westward, along the coasts of Guinea and Serra Leona, could not well be begun till late in October. For, in this quarter, probably owing to the position of the land (which, as in India, is confined to *one* hemisphere only), much the same changes, and those changes nearly at the same periods, take place as within the limits of the monsoons : a SW wind and rainy weather being succeeded by a NE wind and dry weather, some time in the month of October. The currents *near* the *shore*, and in the *ocean*, run in opposite directions : along

¹ More remarks on the subject of provisions occur in the sequel.

² Equal to about 35 degrees in distance, including the windings of the coast.

the former, they appear to run to the east during the whole year ; in the latter to the west : and as the course of our navigators must have been confined very near to the shore, the current would of course be adverse to them at all times ; and in the SW monsoon, the wind also ; and probably with an acceleration of current.

It appears then, that had they arrived at the equator in July, they could not have made their way westward till October at least ; and, on the other hand, it is more than probable that, after a navigation of such length, great repairs must have been necessary to the ships, besides rest and refreshment to the crews : for a coasting voyage, even in the improved state of modern navigation, is infinitely more fatiguing than the longest voyage in the open sea³. Wherefore, the interval of $3\frac{1}{2}$ months between the *earliest possible time* of arrival at the bay of St. Thomas, and that of the commencement of the season for sailing westward, appears even too short for the above purposes. It seems, therefore, that the beginning of November was the *earliest probable time* of their departure, westward, along the coast of Guinea. Arguing therefore on this ground, we shall have disposed of one whole twelvemonth, to this period, since the ships entered the Indian ocean at Cape Guardafui : to which is to be added, the time consumed in the navigation down the Arabian gulf, &c. to that point. Herodotus reckons the gulf

³ See the history of the coasting navigation of Captain Cook, in the Endeavour, along the eastern coast of New Holland, in Hawkesworth's Voyage, Vol. iii.

itself 40 days of navigation ; wherefore we may take the whole, to Cape Guardafui, at full two months⁴. But then it is to be considered, that a ship which would require 40 days to sail the length of the Red sea, must leave the head of it earlier than the latter end of August or beginning of September (which the anticipation of two months from Guardafui would bring the point of departure to), or the season would not admit of her getting into the ocean. Therefore, we should rather date the commencement of the expedition at the end of July or beginning of August, in the year preceding that of the arrival of the fleet in the bay of St. Thomas : so that fifteen months would have elapsed since they left their original place of outset.

We wish the reader, however, to understand, that our object is rather to shew the possibility of executing the plan of this ancient expedition, by pointing out the steps by which it might have been accomplished, and by which so long an interval might

⁴ The whole is about 30 degrees, equal to 78 days, at 23 miles per day. Perhaps this rate is too low ; as that arising on the 40 days of Herodotus is too high for so long an interval, it being 32 miles per day. It is probable that he stated what *might* be done, rather than what *was usually* done. Pliny's 30 days, between Berenice and the ocean, give a rate of 30 miles. It would appear that the rate of Nearchus, in the Persian gulf, approaches very nearly to this calculation of Pliny, in the Red sea.

The winds in the Arabian gulf are favourable to the navigation *downwards*, during the *greatest* part of the year : and in this portion of it, the season in which we have supposed the *Egyptian* fleet to navigate it, is included.

have been consumed, than to affect to describe the exact progress of it, which it is impossible for any one to know, at this time. We have therefore mentioned a determinate time, more for the sake of prosecuting the calculation than otherwise ; but it is highly probable that the fleet of discovery was directed to sail to the point, proper for taking advantage of the earliest part of the north-east monsoon, at a period *so early*, as to preclude all danger of losing that advantage by *accidental delays*. The probabilities therefore are, that they departed from the head of the Arabian gulf even earlier than we have stated : and that they staid some time at the outlet of the gulf, waiting for the change. Such a delay would necessarily reduce the long interval allowed for the navigation.

Before we proceed with the remaining particulars of the route, we shall say a word concerning the subject of *provisions* ; by much the most difficult point to comprehend.

During the early part of the voyage, we may suppose a constant and regular supply. A king of Egypt who possessed the power and spirit of enterprise attributed to Necho, could surely command, either by means of influence or negotiation, a supply of provisions and necessaries for his fleets through the Red sea. With equal probability, we may conclude that the habits of intercourse with the people along the eastern coast of Africa, would, by means of the accustomed medium of commerce, procure them the necessary supplies ; so that the fleet might be nearly as well victualled when it arrived at Mozambique, or

Sofala, as when it left the head of the Red sea. Much perhaps, in this way, is not to be reckoned on, between *Sofala* and *Benguela*, or *Angola*, where they might arrive in 4, or $4\frac{1}{2}$ months afterwards; and where, it is probable, they made their *first long halt*, after leaving the Arabian gulf; this being a fruitful and productive country, and situated in the heart of the southerly trade wind ⁵. It appears that along the rest of the western coast, as well as that of Guinea, &c. and even to the rivers Gambia and Senegal, there is at present, and no doubt was at that time, a considerable degree of population; and plenty of provisions, in their seasons ⁶. We return to the voyage.

⁵ That is, SE in the open sea; *south* or SSW near the shore.

⁶ Here it is proper to observe, that Captain Thompson and Sir Home Popham found no fresh water in rivers or ponds, between the parallels of 16° and 31° S: that is, in an extent of 900 miles, or more. But it is probable that the ancient navigators, who were accustomed to renew their stock of water continually, were possessed of more knowledge in this way than our modern navigators, who fill their casks so seldom. They probably dug *wells* in the *sea beach*, as Nearchus did, and as is now done on the desert coast of Persia, and other places.

Here we shall mention that the above named officers, whilst exploring the western coast of Africa in 1786, saw a marble cross on a rock near *Angra Pequena*, in lat. $26^{\circ} 37'$ S. The cross had on it the arms of Portugal, but the inscription was not legible. It appears to be the southernmost of the two crosses erected by *B. Diaz* in 1486, the year in which he discovered the Cape of Good Hope. He called the place *Santa Cruz*.—The marble had been taken from the adjacent rocks.

We learn from Barros, that Diaz sailed during this voyage 140 leagues to the eastward of the Cape, where he set up his last cross, on one of the groupe of small islands in the *Bay de*

Let the next interval be supposed to have been between the *bight* or bay of St. Thomas, and the river of Senegal : a distance, along shore, of about 39 degrees. This perhaps might have been accomplished, at a proper season, in about four months ; and probably not in less, because the motion of the sea is generally adverse to the progress westward and northward, along the whole extent of Africa, from St. Thomas to Cape Bojador.

The streams of current in the Atlantic are so extensive and intricate, as to deserve a most minute investigation on the score of navigation : but such an investigation would be out of place, in a work already too much extended, by matter that may perhaps be deemed extraneous. A short view of the currents is however absolutely necessary ; in order that the reader may be enabled to form an opinion respecting the just mentioned impediments to the remaining part of the navigation in the Atlantic.

The currents in question, as well as those every where else, appear to be, in the first instance, the effect of general winds, combined with the positions of the different sea coasts ; after which, in some

Lagoa ; and which islands, from this circumstance, we may suppose, were named *Santa Cruz*. Perestrello describes these islands ; with the additional circumstance of there being *shelter at all times*, within them, in 12 or 13 fathoms, clear sandy ground. He describes the small islands of *Chaons* to be somewhat farther to the east ; and these answer to the Doddington rocks, which are, by the map, just 140 leagues to the eastward of the Cape of Good Hope. See a French translation of Perestrello's Directory, in the *Neptune Orientale* of M. d'Après, 2d edition.

cases, the confluences of different currents, in the ocean, occasion them to take new lines of direction : and in others, by the separation of the stream, the parts of the same original body, flow in lines, very wide of each other. Much knowledge respecting this subject has been obtained, since the invention of time-keepers ; but even yet, the subject is new. We shall endeavour to compress our discussion into as short a compass, as is consistent with perspicuity ; and trust that it will not prove absolutely useless, as it respects modern navigations⁷.

Those navigators who have attended strictly to their reckonings, and have also had opportunities of comparing them with cœlestial observations and *time-keepers*, find that there is a constant motion of the sea to the *southward*, along the western coasts of Europe and Africa, from the parallel of Ireland, at least, to the borders of the *south-east* trade-wind ; which, in the Atlantic, is generally found to the northward of the equator : and, on the other hand, a motion of the sea to the north, from the southern extremity of Africa, to the equator, or rather beyond it. It will be understood that we here mean, the *general* direction of the great body of each of these streams ; and that we except those particular *veins* of them which are influenced or produced by inlets or projections of the coast, or other local circumstances. Such is the counter current in the Bay of Biscay ; the indraught of the Strait of Gibraltar ;

⁷ There will be found in the Map No. X, at page 348, drawn for the purpose of explaining the present subject, the direction of the currents in the part of the Atlantic under discussion.

and the *obliquities* and *eddies* produced by Cape Blanco, Cape Verde, and Cape Palmas. The same is to be said of the tides. We shall begin with the current on the north of the equator.

This motion of the sea is felt in the line between the west side of Ireland, Madeira, the Canary, and Cape Verde islands ; but to what distance into the ocean, westward, we know not. Between Ireland and the Canaries, it inclines but little to the west of south : between that and latitude 12° , in the meridian of St. Jago (Cape Verde Islands), it bends more to the west, owing probably to the projection of the intermediate coast ; but from the latter point to the border of the SE trade, it turns considerably to the eastward of south ; conforming again, in some degree, to the shape of the continent, although protected to a greater distance from it, than before, by the prominent form of Cape Verde. The sea within, as far to the south as Cape *Monte*, is occupied by uncertain and perplexing currents, influenced also by the *periodical* winds : for the seasons along the coast of Guinea, and Serra Leona, (as we have said) very much resemble the *monsoons* of India ; perhaps from the same cause, the land being chiefly on one side of the equator. So that, in effect, Cape Verde, which is the western extremity of the great *belt* of *high land*, that runs through North Africa, is also the boundary between the fixed and the periodical winds on the coast.

This is the great outline of the stream of current from the northward ; which, having reached the parallel of two or three degrees north, about the

meridian of Cape Verde, (that is, the middle of the stream), it there meets the great southern stream in its escape from the gulf of Ethiopia.

This stream, which was originally impelled by the southerly trade along the coast of South Africa (in like manner as the other stream by the NE trade), is increased by the continuation of the current round the Cape of Good Hope, from the Indian sea; and also in its progress northward, by the strong southerly winds that force the water into the Ethiopian gulf. This accumulation of water escapes westward, in a direction nearly parallel to the coast of Guinea; but not so near it as to prevent a narrow vein of easterly current from passing *within* it; although it approach in great strength within 35 or 40 leagues of Cape Palmas, on the SW. This vein of *easterly* current is a part of *that* which came originally from the north, and which falls in again with the coast at Cape Monte, near Sherbro'; and thenceforward conforms generally to the line of the coast, till it has advanced beyond the equator; when meeting the southern stream, it is of course lost in it. It is obvious, that the vein of current in question is the one which obstructed our navigators in their progress westward: it is said to run constantly during the whole year; and it was in the month of February that the observations on which we principally depend were made.

It is of much more importance to modern navigators than to the point of our subject, that the result of the meeting of the two streams from the north and south, near the equator, should be given. What

we shall detail respecting it, is collected from the admirable journal of my friend Mr. Dalrymple, kept on board the Grenville East Indiaman, in 1775; and from the journal of Captain Cook, which latter, although highly valuable, could not be published throughout in so detailed a form as the other.

The junction of these almost opposite streams produces a new direction of the confluent waters; but, as the stream from the east is, out of all proportion, stronger than the other, the new line of direction, instead of being a mean between the two, which may be about S by W or SSW, becomes WSW or SW by W only: on which points, or between them, this great body of water crosses the equator in its passage towards the approximating point of South America, nearly in the meridian of St. Jago: that is, about midway between the two continents. As it approaches America, it bends more to the west, and by degrees to the north of west, as it mixes with the northerly current that is formed by the south-east trade wind, which blows obliquely against the coast of Brazil. This northerly current appears to be nearly equal in strength to the other: and having passed Cape Roque, the new confluent stream takes its course westward, along the coasts of Brazil and Guiana; and being continually augmented by the operation of the NE trade, aided by the positions of the coasts and islands, it finally produces that wonderful stream, called the GULF STREAM; concerning which it will be unnecessary to speak in this place.

It is impossible to determine the breadth of the

great *equatorial* stream : but we guess it to be no less than five or six degrees, where it crosses the *line* ; although it is probably less, where it first approaches the coast of Africa ; and where it also acquires (as it would appear) its greatest degree of velocity. In its track through the Ethiopic gulf, where Captain Price crossed it in his way from Cape Lopez to St. Helena, it appears to be eight to ten degrees broad, from NE to SW.

The velocities of these currents differ very widely in different places ; but the stream from the south is almost every where the strongest. Where Captain Price crossed it, the greatest velocity was 22 miles in 24 hours to the north-westward ; and the strongest part was nearest the African shore, the weakest towards St. Helena. Nearly opposite Cape Monte, in 2° to 3° north latitude, the rate was about 40 : thence to the meridian of the Bissago islands, and at 1° north of the line, it increased to the surprising rate of 76 and 77, during two days, but afterwards diminished to 62 : and thence to 19° or 20° west, in 1° S latitude, to 35 and 30. It seems to hold nearly the same rate till within 120 or 130 leagues of Cape Roque, when it abates in point of strength as it declines to the west, until it is again quickened by the northerly current of Brazil and the NE trade.

It would appear that this stream of equatorial current does not extend beyond two or three degrees north of the line, or more than three or four south of it in the part where it crosses.

From what has appeared, it seems certain that

navigators cannot cross the equator without crossing this strong and wide stream of current also; and that they must lay their account with being carried several degrees to the westward, unless they kept close to the coast of Guinea, which is likely to prove much more inconvenient, from other causes.

It has also appeared, that the current runs strongest between 10 and 18 degrees west longitude: there also it runs rather to the *north*, than to the *south* of west; to which may be added, that the SE trade wind is more southerly *there* than farther west: so that every circumstance is *against* this track. On the other hand, within 5° of longitude of the coast of America, the current begins to turn to the west and north of west. But between 18 and 30° of longitude, the current is the most moderate, and also sets to the southward of west: and the winds, the farther we go to the west, blow more from the east: that is, are more favourable to a southerly course. Within this space, therefore, is the best track for crossing the equator and its current; and rather towards the eastern than the western side of this space: perhaps the meridian of St. Jago, $23\frac{1}{2}^{\circ}$, may be the best of any.

The velocity, and other circumstances of the stream from the northern hemisphere, are next to be spoken of. From about Cape Cantin, northward, the indraught of the strait of Gibraltar occasions a motion of the sea that way; but, on the opposite side of this cape, the current runs to the southward, and increases in velocity as it approaches Cape Bojador. However, the general current from the north

is much weaker than that from the south; and therefore the passage round Africa, from the Red sea to the Mediterranean, appears at every step, as we advance in the inquiry, to have been an easier task than a different order of proceeding.

In the open sea, between the island of Madeira and the south-east trade, the velocity does not appear to exceed 10 to 14 miles per day; but in approaching the land of Cape Blanco, it is found to be in some places 24. Along the coast of Guinea it varied from 30 to 10, or 17 at a medium: and on that of Serra Leona (or Western Guinea), it was about 12 southward, during the northerly monsoon; eight or nine northward, during the opposite one; reckoned at a medium of the northern and southern *sets*, during the number of days that the ships were exposed to it. But it is proper to observe, that no degree of current was observable between the parallel of 10° , and that of the mouth of the Gambia, in either season; which still water appears to be owing to the form of the land of Cape Verde, which throws the current so wide into the ocean, as to prevent its return in any shape, so as to disturb the quiet of the sea, to the distance of several degrees beyond it. And it may be remarked, that within the space subject to periodical winds and currents, the extensive cluster of islands and shallows, named *Bissagoes*, and also those of St. Anne, are found ^a.

^a Although the motion of the sea be, on the whole, more to the north, in one season, and to the south in the other; yet so near the shore as a coasting vessel would navigate, the tide has a considerable influence. In the offing, some of the old naviga-

Cape Blanco occasions a similar degree of quiet in the bay of Arguin, which lies to the SE of it. There also islands and shallows are accumulated to a great extent: and the current does not close with the shore for 50 or 60 leagues; but it evidently comes in to the north of the river Senegal; since the singular deviation in its course, near the sea, is the effect of a southerly current, which has hurried its depositions lower and lower down.

The singular form of Cape Verde is no doubt owing to the *general* current on the north, and the *counter* current on the south, which have corroded the land on both sides, until nothing remains, save the sharp termination of the base of the great *mountainous belt* of North Africa. Concerning the effect of the obliquity of the current, occasioned by it, we have just spoken: but it may also be proper to mention, that, as the conformation of the land affects the water below, so it does the atmosphere above: for the trade winds during the winter of the northern hemisphere, are inflected by it, from NE to NW.

These are the general outlines of the streams of current in the south and east parts of the Atlantic; and which, to explain in a detailed manner, would require a volume. It is highly probable that the seasons may occasion a very considerable degree of variation, in the *length*, and perhaps also in the

tors have remarked, that the currents are very uncertain and distracting. Possibly a part of this seeming uncertainty arose from bad reckonings; for in the modern reckonings, checked by time-keepers, and good observations of latitude, the currents appear pretty regular here.

breadth of the three principal streams ; that is, the northern and southern ; and the equatorial current, formed by the confluence of the two first : but there is no reason to suppose that any alteration takes place in their line of course. As for the particular *veins* of current that are derived from the main streams, and which conform to the indentings of the coast, there is no question but that great changes take place, as well in their courses, as in their velocities, in such places as are subject to the influence of periodical winds and of tides. We trust that the length of this discussion will be pardoned on the score of its applying as much to the business of modern navigations, as to the elucidation of ancient ones.

From the result of this inquiry, it appears, that our *circumnavigators*, who could have navigated the coast from the bay of St. Thomas to Senegal, only in the seasons of the NE winds, or of the sea and land breezes that prevail in the winter of the northern hemisphere, must have had, generally, an adverse current as far as the *Bissagoes* ; and again, every where to the north of Cape Verde, (the bay of Arguin excepted) as far as Cape Cantin. Moreover, that from the Senegal river, to the end of the NE trade, the wind, as well as the current, was against them ; so that the latter part of the passage through the ocean, must have been tedious indeed. We return to the consideration of the detail of the voyage.

The beginning of November has been fixed as the earliest time of moving westward ; and the dis-

tance, following the windings of the coast, has been taken at 39 degrees (of a great circle). It has been stated in page 390, sup. that they were opposed by currents of different degrees of strength, and also that there is a space (about five degrees) on the south of Cape Verde, where the sea is still. Therefore the impediment, calculated at a medium throughout, may be taken at 13 miles per day.

It has also appeared that 35 miles was the medium rate of sailing of the ancient ships (see page 360 sup.); from which, 13 being deducted, leaves 22 for the net progress. But even from this, there are to be deducted all kinds of delays, whether casual, or growing out of the ordinary wants of the crews, and also accidents; so that it is probable, that no more than 18 can be allowed for the regular and constant progress: and, it may be remarked, that Nearchus advanced at no greater rate than $22\frac{1}{2}$ per day through the ocean; although no current is supposed; and very often 17 was the result of a hard day's work⁹.

The 39 degrees, at 18 per day, require 130 days, or upwards of four calendar months: so that they could not arrive at the river of Senegal before the beginning, or towards the middle, of March.

Here we may conceive the navigators to have been again within the sphere of their knowledge; on a supposition that this part of the coast had been already explored, in a general way, either by the

⁹ It is proper to remark that the rate of Nearchus is founded on the number of *sailing days*; had it been on the gross number, it would have been still lower.

Egyptians or Phœnicians: and that they would be apprised, in consequence, of their relative position to the pillars of Hercules, and to their native country.

According to the foregoing calculation, they had been about 19 months, or more, from the head of the Red sea, when they arrived in the Senegal river; and might yet have a voyage of five months to perform, in order to complete their circumnavigation. For although the distance from the Senegal to the mouth of the Nile, along the coast, in the usual way, does not exceed 57 degrees, yet they had to contend (as we have shewn) with an adverse trade wind, as well as a current, propagated by it, during the first part of their voyage from Senegal homewards; and which, from these circumstances, may perhaps have been the most arduous part of the whole¹. And it may also be supposed, that, waiting the September harvest, at the Senegal river, they could not profit so much from the land and sea breezes, as at an earlier period.

The space occupied by the still water in the bay of Arguin, &c. being deducted, 10 or 11 degrees remain, of a navigation, impeded by an adverse current; and where the wind, although subject to *inflexions*, from the alternate influence of the land

¹ The existence of this current, which is allowed on all hands, is proved by the error of Hanno, who calculated that *Cerné*, (Arguin) was just as far to the south of *the Straits*, as *Carthage* was to the east of it. The difference, which is very considerable, is occasioned by the current, of which Hanno appears to have been ignorant; he calculating merely by the ship's reckoning. More will be said concerning it in the next Section.

and sea, is yet unfavourable. Perhaps, less than 40 days cannot be allowed for clearing the limits of the NE trade wind; or about 15 miles per day. But beyond the trade, the *prevalent* winds would be fair the whole way to the Nile: a distance calculated to be about equal to 80 sailing days, at the mean rate of 35. However, allowing for the usual delays and impediments, it may be taken at 110; and then we have 150 days, or about five months from the Senegal to the Nile.

Here then, the aggregate of the time consumed during the voyage to the Senegal, together with the five months to the Nile, is just equal to *two years*; but we are told by the Historian, that "they consumed two years *before* they *set out* from their place of harvest in Libya, to return to Egypt; where they [of course] arrived in the third year." So that on their arrival at Senegal, there would be wanting of the two years, an interval of about five months, or less, if we suppose *this* to be the place at which they waited for a harvest, either of their own raising, or (which is more likely), the ordinary harvest of the people of the country².

It may be contended, that there was no more reason to wait a harvest *here*, than at any other

² We would be understood to mean in *that* QUARTER *only*, and not in any particular spot. The place may have been either the *Gambia* or *Senegal* river, or even some place between the two; but such rivers were likely to attract the attention of the voyagers; and moreover, they would doubtless wish to return within the limits of their knowledge, before they made *another* considerable stay.

point of their voyage: but it may be said, that having now ascertained the probable length of the remaining part of their voyage, they might resolve to victual themselves at once for that whole interval; and that, without the aid of the expected harvest, the people of the country might not have had a stock sufficient for themselves and for the strangers also. And in the mean time, the ships might have been repaired, and every thing deficient replaced. Such repairs are called for in all ships after their being a long time at sea: (and even Nearchus was compelled to repair his ships at the *Sittacus* river, although he was then advanced within ten days' navigation of his destined port.) We do not, in this place, advert to such repairs as may be called for through common accidents; the time required for *those* being allowed for in the ordinary calculation of *sailing days*.

We confess that no situation appears more probable than *this*, to wait the harvest described in the history: for the period of TWO YEARS (the interval mentioned in the history, which, as a text, must be our professed guide), would, apparently, expire in this part of Africa, provided they made any great stay. And although we have calculated the dates, on the principle of their arriving at, and proceeding along the coast of Guinea, at the beginning (nearly) of the NE wind, yet they might, as we have hinted before, have been delayed longer on the way, and consequently have arrived later. They might also have been longer on their voyage down the Arabian gulf, than we have calculated, and might have sailed earlier than *necessity* required, in order to secure the

full benefit of the NE monsoon in the Indian sea. In consequence, the time of waiting at the place of harvest, might have been not only short of five or six months, but may have been three or four only.

The harvests in this quarter are said to be in *September*; and the seed time in June, or the beginning of July. Of course, our voyagers had a long time to wait: and it may appear to those who form their opinions of ancient navigations, by what they see practised in their own times, to be highly improbable that such arrangements should have taken place. But the act of shortening by nearly *one third*, the time employed in passages to and from India, within these few years, at a time when the art of navigation was supposed to be in a very highly improved state, may prepare us for believing that much greater changes and improvements had taken place previous to that period.

If we suppose that they completed their store of provisions, and were ready to sail, by the end of September, two years and two months would have been consumed, since their departure from Egypt; and no one will suppose that the Historian meant to be critically exact, when he mentioned the term of two years. But, in fact, the truth of the *whole* story does not rest on the consistency of this *particular*, any more than the truth of Hannibal's expedition into Italy, on the story of the effect of vinegar on the Alpine rocks. No one believes the story of the vinegar; and no one disbelieves the history of the expedition³.

³ Perhaps it may not be known to many, that Sherefeddin,

Thus it appears, that the principal difficulty to be surmounted, in ancient voyages, arose from the impracticability of storing the ships with provisions, adequate to the vast length of time required for their navigations ; where the rate of sailing was so remarkably slow. They were ill adapted to distant voyages ; (and which, indeed, it appears, they seldom undertook) : but did very well in situations where they could land, and command provisions, almost at pleasure ; or at any rate, by compulsion, when they sailed in fleets. But, on the other hand, they were better adapted to those coasting voyages, which constituted almost the whole of their navigations. The flatness of their bottoms required much less depth of water than modern vessels of the like tonnage ; whence arose an incredible advantage over ours, in finding shelter more frequently ; and indeed, almost every where, except on a steep or rocky shore ; since in default of shelter, afloat, they drew their *large ships* upon the beach, as our fishermen do their large boats. And we may certainly conclude that vessels of a construction and size the best adapted to the service of discovery and long voyages, were chosen on occasions like the present.

In effect then, even the *nature of their* shelter, oftentimes differed essentially from ours. Moreover, by keeping close to the shore, they ran less hazard

the historian of Tamerlane, says, that vinegar was used in the siege of Damascus (in like manner as by Hannibal) : that is, they heated the stones of the wall, and then threw vinegar on them ; after which, says he, they easily broke them to pieces with hammers. Lib. v. c. 27.

of missing such ports as suited them ; but which would escape the observation of modern navigators ; who, unable to profit of such advantages, endeavour to balance the account, by avoiding the dangers of *lee shores* and *shallow waters*. We conceive that people sometimes entertain wrong ideas of the circumstances of ancient navigations ; reckoning amongst the greatest difficulties, those which were the easiest surmounted. The voyage of Nearchus, the only ancient one given in detail, convinces us, that the perils of coasting navigations were not so great amongst the ancients, as amongst the moderns. Their ships, from the nature of their construction, not only required less depth of water, but they got off easier, and suffered less, when aground : and when at anchor, they exposed a less surface to the wind, from the lowness of their masts ; and, from their lightness, rode with less strain. It will here be necessary to enter into some details, relative to the management of ancient ships, when near to, or at the shore ; in order to shew that even the ships of war were drawn up on the beach : and as it may reasonably be supposed, that a smaller class were employed in voyages of discovery, this circumstance would render the operation yet easier.

Historians, as well as poets, are in the habit of mentioning the practice of drawing up the ships on the beach ; and oftentimes of inclosing them within a rampart, on the land side. The fleet of Nearchus was so drawn up, and fortified, twice during their voyage ; and at other times drawn on shore to be repaired.

On many occasions, where the landing of the crews of other fleets, in a body, is mentioned, we cannot readily distinguish whether the ships' heads were merely *put to the shore*, or whether the ships were drawn up on the beach.

The grand fleet of Xerxes, consisting of 1200 *triremes*, and a vast number of smaller vessels, when at *Doriscus*, "were brought to the shore, and the crews enjoyed an interval of repose, whilst Xerxes was reviewing the army," &c. Polym. 59: after which, (100) "the ships were *pushed* from the land, and moored at 400 feet distant, with their *prows* towards the shore, in an uniform line; whilst Xerxes reviewed them, passing between them and the shore in a Sidonian vessel."

The crews of the combined fleet of Greece were *on shore* at SALAMIS, when the news of their being surrounded by the enemy arrived. Urania, 83.

But the most pointed notice concerning their mode of procedure, on occasions that required shelter, is that which occurs in the same fleet of Xerxes, previous to the storm on the coast of Magnesia, in which 400 ships were lost. Polym. 188.

"As the shore was of no great extent, the fleet was ranged in eight regular divisions, with their heads to the *main* sea, in which situation they passed the night." (He had before said, that the foremost rank was drawn *close* to the land, and that the others lay at anchor behind.) On the approach of day, a furious storm arose, attended with a violent gust of wind from the east, which the inhabitants of these parts call a *Hellespontian* wind. *They who*

foresaw that the tempest would still increase, and whose situation was favourable, prevented the effects of the storm, by drawing their vessels ashore ; and with them preserved their own persons. Of those whom the hurricane surprised, farther out at sea, some were driven to the Straits of Pelion," &c.

Here it appears that the want of a sufficient extent of that kind of shore, on which ships might be drawn up, prevented the whole fleet from being placed in a state of security on the sea beach ; and which probably fell to the lot of few besides those in the front line. It appears also that the crews only of such ships as *touched* the shore were permitted to *leave* their ships ; and which crews, on the increase of the gale, were in a situation to draw them up, out of the reach of the body of the *surf*. No doubt, on other occasions, it was likewise the practice to draw the ships up, when threatening appearances were perceived.

As this fleet was composed of the prime ships and seamen of the Mediterranean at that time (the Phœnicians, Ionians, and Egyptians), we may suppose that every precaution was taken that skill and experience could suggest.

But to be enabled to accomplish the above precautionary step, the vessels must necessarily have been *very flat*, since they are said to have been of such bulk, as to require crews consisting of 200 mariners and 30 soldiers. Such a form, indeed, the shape of the rudders of ancient ships sufficiently

testifies : a kind of *oar*, by which alone, projecting far beyond the eddy water formed by the passage of so *full built* a vessel, they could be steered with effect. We may suppose, on the other hand, a *pro*w projecting far beyond the *stem* ; which facilitated the landing of the crew, or boarding an enemy ⁴.

Nearchus had *long* ships (or ships of war purposely built), in his fleet ; and yet these ships came down the Hydaspes and Indus ; a certain proof of the flatness even of the ships of war.

The Chinese *junks*, whose structure we have examined, may be somewhat like the ancient ships ; and may not have varied much amongst that wonderful nation ; who, like the Hindoos, so early attained the necessary point of improvement, but have never reached the summit of it.

It appears improbable that voyages of circumnavigation were repeated ; as well from the great delays attending them, as that the articles of merchandize, the most in request (particularly gold and ivory), were to be had much nearer home. Hence, it would appear, the discovery itself came to be forgotten before the time of Ptolemy, even in Egypt, the country from whence it was undertaken ; and in Alexandria, the greatest commercial mart in the world, where one might have expected an event of a nature

⁴ Whether such large ships as those described by Polybius, lib. i. c. 2, in the contests between the Romans and Carthaginians, in the second Punic war, and which carried 420 men, were drawn ashore, like the others, we know not ; nor is it, indeed, to our present purpose.

so interesting to navigation, would have been carefully treasured up¹.

To those who may infer, from the silence of Ptolemy, that the history of the expedition is to be regarded as an imposition, we can say nothing stronger in answer, than that the knowledge of the discovery of the eastern side of *New Holland*, at a period, perhaps 150 years before the voyage of Captain Cook, was lost in Europe, until the chart of the discovery was noticed in the British Museum a few years ago, and posterior to the death of that GREAT NAVIGATOR. Now, if this fact could be forgotten *throughout Europe*, in a century and a half, and after the invention of printing, we cannot wonder that the other should meet a similar fate, especially after such circumnavigations had been long out of use; and at a time when registers of facts were with more difficulty preserved!

Herodotus gives, on the authority of the Carthaginians, an account of voyages made to the western coast of Africa, which contains some curious particulars. These voyages may be considered as the *suite* of those of Necho and Hanno. One of them is the voyage of *Sataspes* (before-mentioned) in order to *circumnavigate* Africa by the *west*; but which failed. Melp. 43. The others appear to be a part of the *regular commercial intercourse* with

¹ Polybius, who lived 250 years before Ptolemy, either did not know it, or did not believe it. Lib. iii. c. 4.

The foundation of Alexandria was about 270 years after the circumnavigation in question.

the people in the quarter towards the Senegal and Gambia rivers. The former seems to confirm his account of the expedition of Necho, and is as follows :

During the reign of Xerxes, Sataspes, of royal descent in Persia, was condemned to death for an act of violence ; but his punishment being commuted into the task of sailing round the continent of Africa, he was directed to set out from Egypt⁶ by the *Mediterranean*, and to return to it by the *Arabian gulf*. As there is no intimation given that the crew of his vessel (or vessels) were considered as criminals, we must suppose that the punishment of the *principal* was to arise from the disgrace of banishment⁷ for two or three years ; together with the hardships and fatigue attendant on so long continued a service, to a man of high rank, and perhaps accustomed to habits of luxury and ease. It may be conceived, that some measure of utility was also intended, though not expressed, by the *Historian* ; and that the expence of an establishment was not incurred for the sole purpose of punishing an individual. It is possible, indeed, that a part of the punishment might have been a fine equal to the cost of the expedition ; although the *Historian* does not record it⁸.

⁶ Egypt then composed a part of the Persian empire.

⁷ It was the practice to *banish* persons to the islands of the Persian gulf : but the same persons were, notwithstanding, called on to accompany Xerxes to the Grecian war. *Thalia*, 93 ; *Polym.* 80.

⁸ It seems as if this story had been well known in Greece ; for Herodotus alludes, it seems, to a well-known anecdote concerning

The narrative of that voyage sets forth, "that passing the Columns of Hercules, he doubled the promontory of *Syloes*, or *Soloeis*, (probably Cape *Cantin*⁹) and steered a southerly course. That, continuing his voyage for several months, in which he passed over an immense tract of sea, and seeing no probable termination of his labours, he returned back to Egypt, and thence to the court of Xerxes, giving as an excuse for the non-performance of his instructions, that he could not advance any farther, (or that his vessel was *unable* to proceed). In consequence of this, his former sentence was executed on him ¹⁰"

Throughout this short narrative, nothing appears that would lead us to suppose otherwise than that the voyage was deemed *practicable*, although *difficult* and *tedious*. For Sataspes did not deny the physical possibility of executing the measure, but only the possibility of performing it *with his vessels*. And, on the other hand, Xerxes gave no credit to his assertions; that is, we may suppose, he *knew* that the measure had been accomplished by others, and thought, of course, that it might have been performed again.

It is very probable that Sataspes was discouraged from prosecuting his voyage by the adverse winds and currents that prevail on the coast of Serra Leona, &c. from April to October, see page 385; and which

one of Sataspes' servants. Herodotus perhaps had seen some of the parties concerned; as the dates will allow of it.

⁹ See above, page 19, *et seq.*

¹ This reminds us of the fate of Sir Walter Raleigh.

would be felt by those who left Egypt or Carthage in the *spring* ; a more likely season to undertake an expedition of this sort than in *winter*, when the order of things is different. We can assign no better reason for the failure, in this stage of the undertaking : and it is the more likely, because the duration of Sataspes' voyage, southward from So-loeis, being "several months," will allow him to have reached the coast in question.

The other account is, that the Carthaginians traded with a people situated *beyond* the *Columns* ; but with whom they had no *personal* communication. The mode of intercourse was effected by one party leaving their merchandize to be exchanged on the sea-beach ; and the other the *gold* in return : and these exchanges (says our Author) were conducted with good faith on both sides. Melp. 196. The seat of this commerce may be guessed to have been near the mouths of the above-mentioned large rivers ; in the first place, because gold is more commonly found to the *southward* of the Great Desert ; and secondly, because it is said by Dr. Shaw, that a like mode of trading exists at present, between "the *western Moors*, and some barbarous nations, bordering on the river Niger ; and without the least instance of dishonesty or perfidiousness on either side²."

We conclude that the date of this traffic was

² Shaw's Travels, page 302. Dr. Wadstrom says the same of certain people on the windward coast of Guinea ; and Cadamosto, of the people of *Melli*.

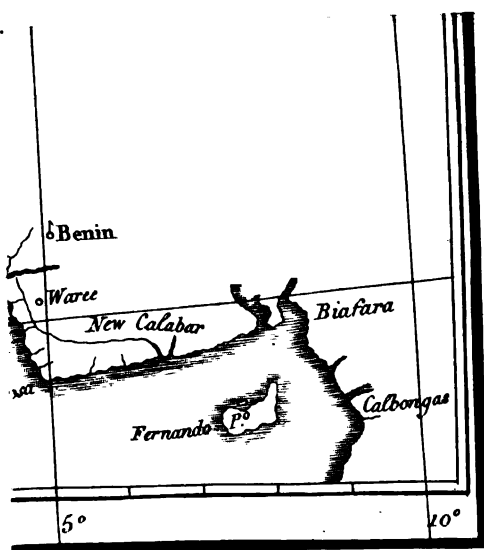
posterior to the establishment of the colonies along that coast, by Hanno : for in that voyage, the Senegal river appears as a *new* discovery, and the mouth of the Gambia was reckoned only a *great opening* of the sea. And by other notices it appears probable that the river *Lixus* (taken for the river St. Cyprian, at about 90 G. miles to the northward of C. Blanco), or the possessions of the tribe of *Lixitæ* on its banks, formed the boundary of the Carthaginian knowledge, previous to Hanno's expedition.

As the journal of Hanno must be regarded, not only as a curious document respecting the Carthaginian settlements on the western coast of Africa, but also as an immediate consequence of the Egyptian discoveries; and moreover, as it appears to have been misunderstood by some, and its truth questioned by others, it is intended, in the succeeding Section, to enter into an examination of certain particulars of it, with a view to shew its consistency.

Thus, we conceive, the assertion of Herodotus concerning the circumnavigation of Africa, will no longer appear in the light of a mere tale; since there existed no physical impediment to its accomplishment: and moreover, as it has been proved that it was undertaken in a manner the most favourable to its execution. Perhaps the brevity of the narration has been the occasion of its being rejected by many; at the same time that inscriptions or legends of medals, though infinitely more brief, are implicitly received as proofs of the facts recorded. Brief, however, as the narration may be, it contains, as M. Larcher justly remarks, a circumstance which is

an evidence to the truth of the voyage; namely, that of the sun being on their *right hand*, in sailing round Africa: and which, says he, could never have been imagined in an age when astronomy was yet in its infancy.





J. Walker sc.

SECTION XXVI, AND LAST.

AN EXAMINATION OF THE ACCOUNT OF THE VOYAGE OF HANNO, ALONG THE WESTERN COAST OF NORTH AFRICA.

Brevity of the Periplus—Consistency of its facts, generally, when tried by the test of geography, and local descriptions—Stories of the streams of fire and savage women accounted for—Design of the expedition, to form commercial settlements—Interval of time employed, not correctly given—The Capes Blanco and Verde; the rivers of Senegal and Gambia; and the Island of Arguin, or Cerné, recognised in the Journal—Evidence in favour of the truth of the Periplus, arising from the effect of the southerly current—Cerné—Progress of the expedition southward from the Gambia river—The Bay of Bissago, answers to the first Port: called the Western Horn—Fires, from burning the herbage, appear terrific to the voyagers—The mountain named the Chariot of the Gods, referred to that of Sagres, or Sangaree—Second Port, or Southern Horn, taken for Sherbro' Sound or Bay—Termination of the voyage at this place—Agreement of the distance sailed, with the time, according to the ancient rate of sailing—Elucidations from Pliny and Ptolemy—Ideas of D'Anville, Bougainville, and Gosselin, concerning this subject—General remarks on the voyage—Probably undertaken in consequence of the Egyptian discoveries—Commercial jealousy—The southern expedition had probably for its object, the commerce of the gold and ivory coasts of Guinea—CONCLUSION of the work.

It is a subject of much regret, that this curious

remain of antiquity¹ should be so exceedingly brief; and that it had not come down to us in its original form; as it is evidently no more than a very brief abstract of a larger work. There appears, however, much consistency in those facts which are susceptible of trial, either by the test of geography, or a comparison with the descriptions of travellers; although they may be blended with stories of *fiery torrents*, and *women covered with hair*; which stories, altogether, do certainly give a cast of fable to it; and, at first sight, seem to rank this part of the narrative with some of the voyages in the *Arabian Tales*.

Certain persons have therefore endeavoured, and that not without some degree of plausibility, to shew, that the facts which thus cast a shade of fable over the narrative, may be accounted for without having recourse to fiction: and as it is of importance to an author, that his reader should set out with a good opinion of his veracity, we shall mention these apologies in the outset.

First, of the *streams of fire*; some of which were said to *run into the sea*. This has been conjectured

¹ The Periplus of Hanno will be found in Hudson's *Geog. Minores*, Vol. i. Mr. Falconer, of C. C. C. Oxford, favoured the public with an English translation of it, accompanied with the Greek text, and explanations, in 1797. The title of the Periplus is "An Account of the Voyage of Hanno, Commander of the Carthaginians, round the parts of Libya beyond the pillars of Hercules, which he deposited in the temple of Saturn."

For the hydrography of this voyage the reader is referred to the Map No. XI, opposite to this Section

to be nothing more than the burning of the dry *herbage*; a practice which takes place, more or less, in every country situated in the warm climates; and where vegetation is also rank. Its taking the appearance of a *river of fire*, running into the sea, is accounted for, from the more abundant herbage of the vallies, or ravines; which, as Mr. Bruce observes, are *shaded* by their *depth*, and remain green the longest. Consequently, being the *last* burnt, the fire will, at that period, be confined to the hollow parts of the country only; and when fired from above, will have the appearance of rivers of fire, running towards the sea. In other places, they saw the whole surface of the country on fire; from all which may be inferred that this was the season of burning the herbage. Mr. Park speaks very pointedly to this purpose: and, it may be remarked, that the scene of his observation was nearly in the same parallel with that of Hanno: Mr. Park's being in *Manding*, and Hanno's on the opposite coast².

² "The burning of the grass, in Manding (says Mr. Park,) exhibits a scene of terrific grandeur. In the middle of the night, I could see the plains and mountains, as far as my eye could reach, variegated with *lines of fire*; and the light reflected on the sky, made the heavens appear in a blaze. In the daytime, pillars of smoke were seen in every direction: while the birds of prey were observed hovering round the conflagration, and pouncing down upon the snakes, lizards, and other reptiles, which attempted to escape from the flames. This annual burning is soon followed by a fresh and sweet verdure, and the country is thereby rendered more healthful and pleasant." P. 259, 260.

He also remarks, that "in *Ludamar* and other *Moorish*

The adventure of the *hairy* women presents much less difficulty than the other; since it is well known, that a species of *ape*, or *baboon*, agreeing in description with those of *Hanno*, is found in the quarter referred to, which must have been near *Serra Leona*. Nor did the interpreters call them *women*, but *gorillæ*: meaning no doubt to describe *apes*, and not *human creatures*, possessing the gift of speech. This part of the narrative, therefore, admits of no difficulty, otherwise than that of wondering how the Carthaginians could be so far mistaken as to denominate them *WOMEN*³.

countries, this practice is not allowed; for it is upon the withered stubble that the Moors feed their cattle, until the return of the rains." Page 259. It may be remarked, that the *first* fires seen by Hanno were at the entrance of the river Gambia; that is, after he had quitted the neighbourhood of the Desert: in other words, the *Moorish* countries. If Mr. Park had written with a design to illustrate the journal of Hanno he could hardly have done it more effectually.

As this operation takes place after the rainy season; perhaps in November and December, this may be allowed to mark the season of Hanno's visit to the coast of *Serra Leona*.

³ The description of the ape found in Africa, called *Pongo*, by M. de Buffon (Vol. xiv.), and that which occurs in Dapper's Travels, p. 249, and in Purchas (Vol. ii. page 982), are sufficient to shew that an animal of the ape species, and which bears a deformed resemblance of the human kind, is found in Western Africa: but a testimony of a yet more satisfactory nature, and more to the point, as it comes from the very quarter, almost the very spot, in which the above adventure of Hanno is placed, is before us. Dr. Afzelius has brought with him from *Serra Leona*, a dead specimen of this ape, which not only approaches nearer to the human form, than any other kind of ape, but whose de-

The principal object of the expedition is set forth in the journal, which opens with the following information :

“ It was decreed by the Carthaginians, that HANNO should undertake a voyage beyond the Pillars of Hercules, and found *Libyphœnician* cities. He sailed accordingly with 60 ships of 50 oars each, and a body of men and women, to the number of 30,000, and provisions and other necessities.”

It is certain, that the numbers appear very great, as well in respect of the extended scale of colonization, as of the number of ships. However, the Roman and Carthaginian ships of war, had crews of 420 men, according to Polybius (lib. i. c. 2.) : and the first city was founded at no great distance beyond the Strait of Gibraltar, the rest short of Cape Bojador ; so that the passengers did not continue on board any great proportion of the time employed in the voyage. But had the numbers been represented greater, or the ships fewer in number, still there might have been a corruption of the text. And as numbers are so liable to corruption, it would be

portment and habits, whilst living, bespoke a superior degree of intelligence to that of mere brute animals.

In the description given by Purchas, it is said that the Pongoes “ are never taken alive, because of their great strength ; unless by killing the females, they take the young ones that hang fast upon the mother.” It has been observed that those were females which Hanno took ; but which “ attacked their conductors with their teeth and hands,” so that they were, in effect, compelled to kill them. Perhaps these might have been a dam with its female young.

unfair to allow such an error to preponderate against a series of probable events.

The date of the expedition has been supposed to be about 570 years before Christ; but of this, more will be said, after the circumstances of the expedition have been fully discussed.

We shall first proceed to inquire into the interval of time employed in the act of *sailing*, and the space gone through, as far as they can be collected from the journal; as these facts, combined with the circumstances of description, will enable us to refer the matter to a geographical test.

The aggregate of the time employed during the voyage cannot, however, be obtained; for we are left totally in the dark during the early and greater part of the voyage, respecting both the rate of sailing, and the number of days they were in motion. This interval includes the space, generally, between the strait of Gibraltar and the river St. Cyprian (taken for the *greater* Lixus), with the exception of the two first days' sail, between the strait and *Thymiaterium*, supposed to be *Marmora*. But from the Lixus, the time seems to be regularly given, to the conclusion of the voyage, southward.

As in the discussion of the position of the promontory of *Soloeis*, it became necessary to enter into the particulars of the early part of this voyage from the strait, southward, to the river Lixus, we shall beg leave to refer the reader to Section XVI, page 10, *et seq.* for our observations on that part.

The particulars of the time from the *greater* Lixus, southward, are as follow :

From the *Lixus*, along the coast
of a desert country, *southward* . 2 days.

From thence, *eastward*, to the
island of Cerné 1

— 3

From Cerné, coasting the shore
of the *Ethiopians*, to the neigh-
bourhood of some mountains . . 12

Sailing *round* the mountains, to
a vast opening of the sea, *bordered*
by *plains* 2

— 14

To a large *bay* or *gulf*, called
the *Western Horn* 5

(N. B. Here, although there
seems to be an *omission* of time,
yet it is probably occasioned by the
mode of expression in the text.)

To the *Chariot of the Gods*, a
high *mountain*, which had fire on it 4

To a bay called the *Southern*
Horn 3

— 12

—
Total 29

In our idea, it is impossible to refer the first 17
days to any part of the coast of Africa, except to
that between the river *St. Cyprian*, and the mouth
of the *Gambia*. The *two first* days, *southward*,
from the *Lixus*, and the *third*, *eastward*, to the
island of *Cerné*, express the sailing round the *land*

of Cape *Blanco*⁴; and from that Cape, *across the bay to Arguin*; which they found situated “*in a recess of a bay.*” Next, the 12 days *southward, coasting the shore of the Ethiopians, on the last* of which days, “they approached some large mountains *covered with trees*, (the wood of which was sweet-scented and variegated),” agrees to the description of the coast between *Arguin* and Cape *Verde*; for, sailing *round* these *mountains*, in two days, they came to “an immense *opening of the sea*; on *each side* of which, towards the continent, was a *plain*.” now this is perfectly descriptive of sailing round the *high land* of Cape Verde, which is covered with trees, of a lively verdure; and of their arrival at the *wide embouchure* of the *Gambia* river, known to *them* only as “a great opening of the sea.”

Cape Verde appears to have been re-discovered in modern times, by the Portuguese, about the year 1447. Here are the descriptions of it, by *Cadamosto* and *Le Maire*, at a subsequent period.

“It is a high and beautiful cape, which runs a good length into the sea, and has two hills, or small mountains, at the point of it. It is covered with trees, which continue green all the year round.” (Cadamosto.)

“This famous promontory is named from the

⁴ The distance is, in fact, about 90 miles between St. Cyprian and C. Blanco; but the current is known to run with great velocity round the projecting shore between C. Barbas and C. Blanco: and, of course, along a *part* of the way from the latter, towards Arguin also.

perpetual verdure of the adjacent country, abounding with beautiful lofty trees. It is very distinguishable in coming from the north, which side is somewhat mountainous. The south side, though low, is pleasant, the strand being adorned with long rows of large trees, standing as regularly as if planted by art." (Le Maire.)

Perhaps, the contrast between the low, flat, desert coast of Senegal, and the elevated land of C. Verde, might have led Hanno to describe the land of the cape more lofty than it really is.

The mouth of the Gambia (or Gambia) is described by Cadamosto to be no less than six or eight miles wide at the entrance, with *low* shores. It may be added, that in this quarter Hanno *first* saw the fires occasioned by the burning of the herbage; agreeing with Mr. Park's account, as we have remarked, in page 412, sup.⁵

⁵ The statement of the date of CADAMOSTO's voyage, given by the Author, in the Appendix to Mr. Park's Travels, having been flatly contradicted in the Critical Review for August, 1799, the Author finds himself called on to say a word in defence of it, since it was necessary to quote the same Author again in this place.

The Reviewer says, "Major Rennell supposes that the Venetian CADAMOSTO wrote in the 15th century; and indeed he expressly assigns him to the year 1455. If the Major could not have recourse to the *first edition* of Cadamosto's Voyages, printed at Venice in 1507, he might at least have consulted the old Latin translation, in that common book, the *Novus Orbis* of GRYNÆUS. He would there have found, that Cadamosto left Venice in 1504, in the 21st year of his age, and that he sailed to Africa in March, 1505."

The Reviewer is perfectly right in saying that Grynæus has
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Here it is necessary to remark, that this was the *second* time that our voyagers had sailed to the

the date 1505 : but the matter is far otherwise in the *original edition* of 1507, printed at Venice, and to which he so confidently refers; as also in Ramusio; and we believe every where else, except in *Grynæus*. In those it is clearly 1455. The original edition is a scarce book, and the Author could find it no where, but in the library of his friend Mr. Dalrymple. Whose copy the Reviewer examined, we are not told : but it would, to be sure, be an odd coincidence, if the same *faulty* copy which misled Grynæus, should also have fallen into the hands of our Reviewer ! He, perhaps, will inform the public where it is, that it may not mislead others.

The Reviewer, by the bye, has betrayed no small degree of ignorance of his subject, by allowing *these dates* (if the *supposed* faulty copy really exists) to mislead him so widely : for a *Critic* should have known that the date 1505, could have no reference to the voyages of Cadamosto. The *suite* of voyages of discovery made by order of the Portuguese, along the western coast of Africa, in which those of Cadamosto, in 1455, and 1456, are included, terminated in 1486, by the discovery of the Cape of Good Hope, by B. Diaz : and De Gama sailed round it to India, in 1497. Moreover, Prince Henry, who employed Cadamosto, died in 1463.

It is unpleasant to be thus compelled to solicit the attention of the reader to personal matters ; but in a case where palpable ignorance must be placed to the account, either of the Author, or of the Reviewer (who has gone very far indeed out of the way, in order to pass an unmerited censure), it is proper that the reader should know on whose side the blame lies. The reader may satisfy himself, by a reference to the history of the above voyages ; and of the fact of Cadamosto being employed by Prince Henry of Portugal (who, we repeat, died in 1463), at the beginning of the history of the voyage itself, either in Ramusio or Grynæus : the latter of which authors was no doubt well apprised of the true date, notwithstanding the *slip* in his book.

As to the other remarks on his geography of Africa, in the

southward, from Cerné: and that the first time they went no farther, apparently, than the *Senegal* river. Leaving Cerné, the first time, they sailed up the river *Chretes*, by which we understand the river of St. John, situated at about 60 miles southward from Arguin, or Cerné. This river led them to a *lake*, which had in it "three islands, larger than Cerné; from which, proceeding a day's sail, they came to the extremity of the lake, that was overhung by large mountains inhabited by *savage men*, clothed in skins of wild beasts, who drove them away by throwing stones, and hindered them from landing." At present, there are four large islands in the space of about 30 miles, surrounded partly by the coast, partly by banks in the sea; and which space may probably be meant for the *lake*; but it is certain that the river of St. John, at this time, falls into that part of the lake which is the *most distant* from Arguin. The land at the extremity of the

same Review, the Author cannot, with propriety, enter into an examination of them, in this place; otherwise than to say, that they chiefly arise from the Reviewer's pinning his faith on Leo, whose authority we have disregarded, in much of what relates to the interior of Africa; because he seems to have written from hearsay. A man who says that the river of Tombuctoo runs to the *west*, can hardly expect to be believed, at this time, concerning what he relates of that quarter of Africa.

The Reviewer "*advises* the Major to *read* books, instead of merely *consulting* them." On this occasion it is almost needless to remark, that it is better even to consult books, than to read them with so little effect as the *adviser* has done. But we beg pardon of the reader for intruding so long on his time and patience.

lake, may well be understood by *Cape Mirie*; which is about a day's sail (of the ancient standard) from the opposite side of the above described *inclosed space*.

“Sailing thence, they came to another river, which was large and broad, and full of *crocodiles* and *river horses*; whence returning back, they came again to Cerné.” In this river then, we recognise the *Senegal*. At present its *embouchure* is more than 200 miles beyond *Cape Mirie*; but it has been shewn that there is reason to suppose that it once joined the sea, at a place 60' higher up, towards *Mirie*. (See page 391).

Had the great river in question been the *Gambia*, we should have heard of *sailing round the mountains* (*i. e.* Cape Verde) in the *first* voyage. On the contrary, it appears that Cape Verde was a *new* object in the second voyage.

Besides the agreement of so many particulars, in regular succession, the distances on the intervals of time, will be found to agree likewise. Thus for instance, on the 14 days' sailing from Cerné, to the great opening, the first 12, on a southerly course, brought them to the mountains covered with trees: that is, to Cape Verde; and 2 more to the great opening, or mouth of the *Gambia* river. The space on the map is 480 G. miles coastwise; which allows 34 and a fraction per day. It has appeared that 35 was the mean rate of sailing, on ordinary occasions: *here* their business was *discovery*; and it is said that they coasted the shore very close, and with a view to a communication with the natives; who,

however, either kept aloof, or only approached to prevent their landing. This necessarily delayed them : and we must therefore account for their quick progress, from the southerly current already described to run along the coast, from the parallel of Cape Cantin to Cape Verde; and which balanced the loss by delay.

In effect then, the *suite* of positions may be regarded as fixed, as far as the Gambia : and, indeed, it seems to be established by common consent, that Arguin represents Cerné, and the river of Senegal that of the *crocodiles* and river *horses*; but M. Bougainville supposes the high land to be that of Serra Leona. To have reached this point, however, in 13 or 14 days from Cerné, they must have sailed every day from 60 to 64 miles, which is highly improbable, as their object could only have been pursued with effect in day-light *.

It was necessary, in order to establish clearly the position of Cerné, in this discussion, to extend the chain of distance to the Gambia, in the first instance, in order to shew its relative situation, both ways : and regarding Cerné as the term of the *first division* of the voyage, and where the plan of colonization ended, we shall detain the reader here a moment, whilst we mention some particulars concerning it, and its supposed relative position to Carthage.

An assertion occurs in the journal, which has hitherto passed unregarded (we believe): for if taken absolutely it is not true; and no one has

* See Mem. Acad. Inscript. Vol. xxvi.

thought of explaining it. It is said, "we judged from our voyage, that this place lay in a direct line with Carthage: for the length of our voyage from Carthage to the Pillars, was equal to that from the Pillars to Cerné." It seems then, that by their *sea reckoning*, they had only advanced as far, since leaving the strait, as from Carthage to the strait: but the map shews that the line from the strait to Arguin, is 320 G. miles longer, than that to Carthage'. Now, it has appeared, page 385, that a constant current runs to the south, along the western coast of Africa; and this accounts most completely for the error of the reckoning; and is, indeed, no contemptible evidence in favour of the general truth of the journal. But the expression of being on a line with Carthage is singular, when it was neither on the same parallel, nor under the same meridian. What then constituted the line in question? Was it the base of a supposed *isosceles* triangle; and that the Author meant to say nothing more, than that they had *come down* from the vertex of that triangle, as much as they had *gone up*? One thing appears certain; that is, that no ideas of latitude and longitude existed at that time.

If we suppose (as before) the southern current to commence about Cape Cantin, the fleet of Hanno might have been subject to its influence near a month, considering the nature of the service in hand; which we may conceive to be that of examining the coasts for places of shelter for ships; and for

⁷ See again, No. XI, at page 409.

situations proper to found cities in ; as also of making inquiries concerning objects of commerce. Hence it will not appear extraordinary, that they should have been carried 320 miles beyond their reckoning. In the offing, between Madeira and Cape Verde, the Grenville was set to the southward 97 miles in 10 days ; and from England to Madeira, 206 in 16 days, in the month of May.

Cerné, or rather *Kerné*, called by the modern Europeans *Arguin*, and by the people of the opposite continent *Ghir*, is in extent only a few miles. The journalist allows it a circuit of five stadia only ; an evident mistake, as it contained a city and colony. As the Carthaginians and Phœnicians possessed it in ancient times, so have several of the European nations, in succession, in modern times : and amongst the rest, the English. It is at present deserted, as the establishments on the Senegal river answer the purpose better : but the ancients seem to have possessed no settlement beyond *Cerné* ⁸. The articles of commerce collected by the traders at this place, were chiefly ivory, and the skins of lions, panthers, and other animals ⁹. No mention is made of gum, a staple article in modern times, or of gold ; but this latter is collected farther to the south.

We shall now enter on the *second division* of the voyage of Hanno, which seems to have been confined solely to objects of discovery. As far as the Gambia,

⁸ For an account of *Arguin*, see *Labat's Voyages*, and also *Astley's Collection of Voyages*, Vol. ii.

⁹ *Scylax*, p. 54.

this part has been already considered : and we shall continue it from that point.

“ Having supplied themselves with water, they sailed onwards five days, keeping near the shore ; and then came to a *large bay*, which their interpreters (the *Lixitæ*) told them was called the *Western Horn*. In this was a large island, and in the island a salt water lake ; and in *this* another island, where, when they had landed, they could discover nothing in the day time except trees ; but in the night they saw many fires burning, and heard the sound of pipes, cymbals, drums, and confused shouts. They were then terrified, and their *diviners* order them to abandon the island.”

The bay or gulf of Bissago (or Bissao) is about 190 G. miles from the mouth of the Gambia, and the island of *Bulam*, which forms a part of its southern shore, short of 200. There are several islands within the bay, and opposite to the coast lies the extensive range of islands and shallows known by the name of the *Bissagoes* ; sheltering the coast for about 120 miles¹. The distances just mentioned agree well to five ordinary days' sailing ; and what is more to the purpose, no other part of the coast, within such a distance as is at all applicable to the question, forms a *sound* of such a shape as answers in any degree to the idea of a *horn* ; as will appear by inspecting the chart at page 409. We are aware that Ptolemy and Pliny, in which they are followed by M. D'Anville and M. Bougainville, refer the

¹ These are the *Gorgades* of Pliny, vi. 31.

horns to *promontories*, and not to *inlets* of the sea. However probable such an idea might have been, had the *term* been given without the *description*, yet here the description is perfect in both the western and southern horns : they were *bays* or *gulfs*, and *contained islands* ; and the western horn, in particular, was said to be a *large bay*. Moreover, the description of the island in the latter, is that of a flat alluvial tract, covered with trees ; agreeing to that of the islands in and about this gulf, which are formed of the depositions of the Rio Grande, and other streams, that roll down vast quantities of mud and sand, when swoln by the periodical rains ; and which have been distributed in the form that we now see, by the periodical currents.

Considering the vast changes that alluvial tracts undergo, it would be idle to expect to find the lake and island above described ; as the one may be long ago filled up, and the other become a part of the continent ; and that, without any material change having taken place in the *general* form of the sound itself².

Leaving the western horn, “ they passed by a

² An island in this gulf or sound, is now named *Sorcerer's Island* ; for what reason is not said. This was the *term* of the voyage of Cadamosto, in 1456 : and which is said to have been discontinued, because the interpreters had got out of their knowledge. Those of Hanno (the *Lixitæ*) failed him, before he doubled Cape Verde ; although he took the name of this Western Horn from the same interpreters. It is not said who told him the name of the Southern Horn : but it is certain that the interpreters furnished him with the name of the *Gorillæ*, which are also found higher up the coast, towards the Gambia.

country which was *on fire*; and *streams of fire* appeared to run into the sea³. They sailed quickly thence, and at the end of four days, discovered at night a country *full of fire*. In the middle was a lofty fire, larger than the rest, which seemed to touch the stars. When day came, they discovered it to be a large hill, called the *Chariot of the Gods*⁴. On the third day after their departure thence, having sailed by those *streams of fire*, they arrived at a bay called the *Southern Horn*; at the bottom of which lay an island, as in the former, having in it a lake, and in that lake another island⁵, full of savage people," &c. It was here, that the *Gorilla* were taken (of which we have already spoken); and this was the term of the voyage of Hanno southward. We shall now examine the suite of positions, from the bay of Bissago, or the Western Horn, southward.

Twelve days are enumerated between the Gambia and the Southern Horn; of which five had elapsed at their coming to their station in the *Western Horn*; and we remarked that the distance to Bissago from the Gambia was 190 miles; being equal to 38 miles per day; which exceeds but little the mean rate. If the amount of seven more such days' sailing, equal to 266 miles, be extended southward along shore, it reaches to Plantain Island, situated at about

³ See above, page 410.

⁴ It does not appear who named this mountain: probably the Carthaginians themselves.

⁵ What has been said respecting the changes by alluvions in the Western Horn, applies equally here. See the last page.

40 miles beyond *Serra Leona*; and if this island, together with the chain of islands that extend from Cape St. Anne, may be allowed to form the entrance of Sherbro' Sound, we have in that sound, in point of form, a southern horn, which is much on a par with the western one; and it may be added, that, between the two, no bay or sound of such considerable *depth and extent* occurs, that can be compared with either: and that of *Serra Leona*, which has the fairest claim of any, does not accord with the situation ⁶.

A suspicion might arise that an interval of time has been omitted between the Western Horn and the hill named the *Chariot of the Gods*; but besides that a mountain, answering to the description and position, is found in that of *Sagres* (vulg. *Sangaree*), there is a notice in Pliny, that serves to confirm the statement of the four days' sailing only from the *Western Horn*. For Pliny says this in positive terms, lib. vi. c. 30. Moreover, the mountain being situated at about 180 G. miles' from the NW part of the bay of Bissago, agrees very well to the four days' sail; as they came in *sight* of it only on the evening of the fourth day. It is true, that, at the rate at which they sailed between the Gambia river and Bissago, they should have been 28 miles *short* of *Sagres* on that evening; but although it be necessary to calculate a *mean rate* for the great portions of distance, yet it is obvious, that at any

⁶ See again the Map at page 409.

⁷ If reckoned from the SE part of the bay, the distance will be 17 or 18 miles less.

given time, the fleet might have been more or less advanced than that mean rate may point out. Moreover, along this whole coast, owing doubtless to the great number of sounds, rivers, and inlets, that penetrate it to a great depth, regular and strong tides prevail; which, of course, might have been made use of to aid the progress.

The description of the mountain of *Sagres*, combined with that of the adjacent coasts, impresses more conviction respecting its being the hill intended by the Chariot of the Gods, than the measure of the distance alone; whether that might be either four or five days' sail.

Lieutenant Matthews' Chart of the coast between Rio Nunez and Sherbro', together with his description (in page 10, *et seq.*), shews us that this coast, which extends 65 leagues, or near 200 G. miles, is, with the exceptions which we shall presently state, exceedingly low, to the extent of 5 to 20 miles inland (he compares it to the land at the mouths of the Ganges, which he had probably seen); when it rises gradually, and at 30 to 40 miles, swells into lofty mountains, that may be seen 20 or 25 leagues off at sea. The exceptions to this flat shore are, first, a lateral chain of high hills, which strikes off from the great inland mountains, by the straightest line to the neighbourhood of the coast, where it terminates in a lofty conical mountain, before spoken of under the name of *Sangaree*, or more properly *Sagres*. The other exception is, the mountainous coast of Serra Leona, which is about 24 miles in extent along the coast, and is connected with the great inland ridge,

by lateral chains of hills. The space between Sagres and the nearest part of this mountainous coast, appears to be 50 to 55 G. miles ; so that Sagres itself rises from a coast, which is perfectly flat, to such an extent inland, as to render this mountain the great marked feature of the coast. As such it is therefore regarded ; and M. Bellin calls it in his chart, the *land-mark* for the coast : for in approaching it from the sea, it has the appearance of a single mountain : and at a distance, along shore, of a lofty promontory.

Piedro de Cintra discovered this mountain, and the point of *Tumba* * (within which it stands, at the distance of a few miles) in 1462. His seamen thought it the *highest* land they had seen. They gave it the name of Sagres, from the fortress of that name, built by PRINCE HENRY of Portugal, on one of the points of Cape St. Vincent : a situation apparently chosen by him, because it commanded a grand and extensive prospect of the ocean, to which his magnificent views were extended. This Sagres was distinguished from the other, by being called Cape

* The Portuguese called it Cape Sagres, from the mountain seen over it. The islands *De Loss* lie opposite to it in the *offing*.

Lieutenant Matthews places Sagres in lat. $9^{\circ} 17'$; Dr. Wadstrom's Chart, in $9^{\circ} 24'$. The maps of this whole coast are generally bad : an instance of which may be seen by comparing Governor Dawes's survey of a part of the coast in Dr. Wadstrom's map, with the ordinary ones. In constructing that of North Africa, in 1798, it was found that the general charts erred *several* degrees of longitude in the extent of the coast of Guinea.

Sagres of Guinea. Prince Henry died in the following year ⁹.

This mountain then, may justly be regarded as the *Theon Ochema*, *Deorum Currus*, or *Chariot of the Gods*, of our voyagers. What the nature of the fire on it might be, we know not : but Dr. Afzelius, who visited it during his residence in that country, pronounces that it is not a volcanic mountain. As we may conclude that the extensive fires *below* were occasioned by the burning of the rank herbage in the alluvial plains, for the purposes mentioned by Mr. Park, it is easy to conceive that the fire might ascend the mountain, and burn the dry herbage there also. Pliny, however, certainly regarded it as a volcano ; lib. vi. c. 30. The Portuguese discoverers remarked no fires till they came into the neighbourhood of Cape *Monte* : but it might have been during a different season from that in which Hanno visited it.

The next, and last, interval of distance, is between this mountain and the Southern Horn ; and was three days' sail.

Serra Leona is 50 miles only from Sagres, and therefore is too near. But Sherbro', as we have said, agrees. For if the entrance of this sound, or inlet, is admitted to be formed by Plantain Island on the one side, and the islands of St. Anne on the other, the distance is no more than 92 miles from

⁹ It appears that the first discoverers, in modern times, the Portuguese, extended the name of *Guinea* to the coast of Serra Leona, and apparently as far as Rio Grande.

Sagres: but admitting the sound to commence at Cape St. Anne, then 112; which allows 34 miles per day: or taking the whole distance from the Gambia, 482 miles¹, this divided by 12, the number of sailing days, gives a rate of about 40 per day; which does not much exceed the mean rate.

Sherbro', as nearly as can be judged from the imperfect charts now in use, is a kind of sound formed by one large island, and a great many small ones; and receives into it three principal rivers, from the side of the continent. Its whole length appears to be fifty miles, and breadth, at the western entrance, more than fifteen. Jenkin's Town lies towards the most retired part of it, in which there are some other small islands.

We feel no hesitation in pronouncing *this* to be the Southern Horn, described by Hanno; and the term of his expedition southward; for, it may be repeated, small differences, whether in point of distance, or of time, are not to be regarded. And if a mean be taken on the whole voyage from Cerné to Sherbro', the result will not exceed the mean of *all* the examples of the rate of sailing of ancient ships, set forth in the notes to page 356: that is, 37 G. miles.

In effect, two bays or sounds, answering to those described by Hanno; and which have between them, at the prescribed distance, a mountain answering to that called the Chariot of the Gods; that is, at four

¹ That is, from the Gambia to Bissago, 190; to Sagres, 180; and thence to St. Anne's, 112: total, 482.

days' sail from the one, and three from the other, can only be found at Bissago and Sherbro'.

Those who may be inclined to consider Serra Leona as the Southern Horn, must recollect that the position of the mountain of Sagres will not suit the length of the intervals; and the other high lands are too near to Bissago.

Ptolemy's Western Horn is a *cape*, agreeing pointedly to that of Sagres, or Tumba; his *Deorum Currus* is a ridge of mountains, very far inland (and to the south of the *Horn*); and the point at which he places the utmost limit of the knowledge of navigators in the ocean, is about nine degrees, or 540 miles in distance, to the SE of the *Arsinarium* promontory, or Cape Verd; whence it has almost exactly the same relative agreement with that cape, as the point of termination of the voyage of Hanno has in our geography. It cannot, however, be known from what sources Ptolemy drew his knowledge: but if from the voyage of Hanno, it cannot well be accounted for why he should have described as a promontory, what the journalist of Hanno describes as a bay or sound. One must conclude, that any person who had read that journal, could not have made such a mistake.

Pliny had *heard* of the voyage of Hanno, but believed that the account of it was lost: for he says, lib. v. c. 1, that no memorial of that voyage, or remains of the cities, were to be found. But he had, notwithstanding, collected several particulars relating to it, which he must therefore have found in other authors, who perhaps extracted them from the

original journal, without quoting the authority. It is also to be remarked, that he had heard many particulars relating to the voyage of Polybius, and may have referred some of them to that of Hanno.

He had also heard (see the same chapter) that the Ethiopians kept within doors in the day, and recreated themselves abroad, with music, in the night ; as Hanno says. It has also been remarked, that he had heard of the Western Horn, and of the mountain that was on fire.

There is also a remark in the same author, which shews his idea of the position of the Western Horn ; which he supposed (naturally enough, as he had not read Hanno's journal), to have been a promontory. Says he, lib. vi. 31, " Here (*i. e.* at the Western Horn) the coast *first begins* to face the *west* ; or to look towards the Atlantic sea : that is, as we understand it, the coast there turned from *west* to *north*. Applied critically, this answers only to Cape *Roxo*, which is situated about 120 G. miles to the WNW of Bissago, the supposed bay, or *horn*, intended by Hanno.

Pliny says further, that opposite to this horn, are the islands of the *Gorgades*, two days' sail from the continent ; and where Hanno caught the two savage women, whose skins he carried back to Carthage. The islands intended, are therefore the *Bissagoes*, an archipelago which extends two degrees along the coast, and some part of which is certainly near two days' ancient sail from the nearest shore. But as the archipelago extends all the way from a point opposite Cape *Roxo*, to the bay of Bissago, one of these

places is as much opposite to the islands, as the other ; therefore nothing can be collected from this circumstance, towards proving which of the two places is to be taken for the Western Horn, intended by Pliny : but the former observation, respecting the change of direction of the coast, points clearly to Cape Roxo. Perhaps, the registers of the times had confounded together the islands that lay off the bay of Bissago (Western Horn) and the island in the bay of Sherbro' (Southern Horn) ; where the *Gorilla*, called by Pliny, *Gorgades*, were taken.

It may therefore be conceived, from a combination of the notices in Pliny, that the Western Horn which he, as well as Ptolemy, had heard of, was a promontory : although the context proves, by the relative position of the mountain of Sagres, that the bay of Bissago is the place to be fixed on for the Western Horn described by Hanno.

Again, this mountain of Sagres has been shewn to be the Western Horn, intended by Ptolemy ; and which, in his geography, is succeeded by a ridge of mountains named *Deorum Currus*, (or Chariot of the Gods²) ; and this again, by the termination of the discoveries southward, in regular and proper order : and what is more, the latter station is at such a distance from Cape Verde, as to agree with Sherbro'³. This circumstance is of no inconsiderable weight, in favour of our opinion, respecting the position of the

² This ridge appears to be meant for the high land of Serra Leona.

³ On the map of Ptolemy, it is 9 degrees, or 540 miles ; and on ours, $9\frac{1}{3}$, or 560.

Southern Horn, and the term of Hanno's expedition. But even if, following Pliny, we take Cape Roxo, or following Ptolemy, we take Cape Sagres, for the Western Horn, it will be found that the bay of Bisago is nearly at a mean between the two: and, according to the text of Hanno, the *Horn* ought unquestionably to be a bay or inlet of the sea. And, on the whole, the term of the voyage of Hanno cannot, in the view of general geography, be greatly misunderstood. And this term was doubtless either at Serra Leona or Sherbro'; but far more probably the latter, as well from position as description.

Here it may be proper to add a remark or two, on Ptolemy's geography of this quarter.

Although his chart of the western coast of Africa, has, in its composition, the materials furnished by navigations posterior to those of Necho and Hanno; yet the term of those navigations, in other words, the boundary of discovery, appears clearly to be the same with that of Hanno.

Now, it seems improbable that other navigators should have terminated their progress precisely at the same point with Hanno; when the circumstance that arrested his progress, was the want of provisions! Indeed, had it been at a promontory which formed the termination of a continent, and in a stormy sea withal, this might have happened repeatedly: but the *term* of discovery in question was situated on a straight coast, which presented no obstacles to their progress.

The chart of Ptolemy may even have received aids from the observations of Polybius: but, at all events,

there arise in it strong proofs that parts of it were formed of materials of a date posterior to Hanno. For instance, in the journal of this commander, the river Gambia is no otherwise noted, than as a great opening of the sea, with a plain on each side of it; but it appears in its proper form, and with a name to it, in Ptolemy. Other instances might be adduced. Hence it appears that other voyagers had filled up some of the *blanks* left by Hanno, although none of them might have proceeded so far as he had: and these might have conducted the traffic in gold, mentioned by Herodotus. See page 406. In effect, Ptolemy's geography of this coast, may be supposed to mark the extent of the Egyptian and Carthaginian traffic, at a period long after the famous voyage set on foot by Necho; probably whilst it was yet remembered, although it might have been forgot in the time of Ptolemy.

We shall close our geographical remarks with some strictures on the opinions of some celebrated modern geographers on the subject of this voyage. Amongst these, M. D'Anville, (who, if not *always* right, is, for the most part, nearer to it than others), agrees with our ideas *generally*, as to the *extent* of the voyage, but differs in the *detail*.

M. D'Anville has not ventured to place the promontory of *Soloeis* in his *Orbis veteribus notus*. The Western Horn, according to him, is Cape Roxo; the southern one, Cape St. Anne, or the point of Sherbro' sound: and the mountains of Serra Leona represent the *Chariot of the Gods*. Hence it appears evident, that this great geographer

followed the authorities of Pliny and Ptolemy, in preference to that of the journal of Hanno.

As to M. Bougainville, his judgment appears to have forsaken him entirely. The foundation of his principal error lies in the supposition that the ancient ships sailed at much the same rate as the modern ones. In the journal, 26 sailing days are reckoned between Cerné and the place of the Gorillæ. M. Bougainville places the latter in the bay, or *bight*, of *Benin*, nearly 1900 G. miles from Cerné (or Arguin); so that he transports the voyagers in 26 days, as far as Capt. Price, in the Royal Charlotte East Indiaman, in 1793, sailed in 23 days, with a fair wind and favourable current: for this was the interval of time employed, between the parallel of Arguin and the meridian of Benin! This might suffice: but we shall also remark that M. Bougainville's *two horns* are Cape Palmas and Cape Three-Points; between which he finds the hill *Deorum Currus*. These points are 270 miles asunder; so that, as seven days' sail are allowed between them, in the journal, a rate of 39 only per day arises here, notwithstanding he is so extravagant elsewhere. But there is no end to his mistakes.

As M. Bougainville *doubles* the extent of the voyage from Cerné, so Mr. Gosselin contracts the *whole* extent of it within Cape Nun: for it seems, he confines all the ancient navigations within this boundary⁴. Mr. Gosselin confines it to less than $\frac{1}{3}$ of the space allowed by Bougainville; $\frac{1}{4}$ of that

⁴ See note to page 349.

allowed by D'Anville. What a contrariety of opinions! Not to insist on the improbability of Hanno's employing $32\frac{1}{2}$ days (the *specified* number, although the voyage was certainly longer) in sailing from the strait to Cape Nun, which allows a rate of about 17 per day only; it may be asked where, within Cape Nun, are to be found the deep bays with islands; the island of Cerné, situated in a deep recess of the land, which was a day's sail across; the great river which contained crocodiles and river horses; the Ethiopians, and the Gorillæ? Certainly not in the kingdoms of Morocco and Sus.

Having, we trust, arranged the geography, or rather the hydrography, of the voyage, we shall add a few remarks which naturally arise on the subject of the voyage itself.

It has appeared that the Carthaginian or Liby-phœnician cities, founded by Hanno, were all situated between the strait of Gibraltar and the river Senegal; and of these, all but Cerné, to the north of Cape Bojador. It does not appear that any attempt was made to fix an establishment to the southward of Cerné, notwithstanding that they sailed into the river of St. John (*Chretes*), as well as into that of Senegal, which we must naturally suppose to be the one which was said to be "large and broad, and full of crocodiles and river horses." This was the extent of the first expedition of discovery, southward from Cerné: and it may be supposed, with a *part* of the fleet only (as they were repulsed in their attempt to land in the river *Chretes*) whilst the crews of the rest might have been employed in the

formation of the new settlement, and in collecting provisions.

In the second expedition southward, they double Cape Verde, and sail across the mouth of the Gambia, called by them "an immense opening of the sea," bounded by plains. As *discovery* seems to have been at least a *part* of their object, it appears strange that they should not have sailed *into* it : and equally so that they should not have discovered, by appearances, that it was the mouth of a large river. This circumstance seems, at least, to establish a fact, respecting the season in which they visited this coast : which was probably when the waters of the Gambia ran pure, and with an easy current, into the sea. It was therefore the season of northerly winds, and dry weather, that is, after October : and this has already appeared by the fires, which can only be referred to the annual burning of the dry herbage, some time after the rainy season.

It is indeed remarkable, that beyond that of Senegal, no mention is made of any river ; although they certainly entered the mouth of the Rio Grande and that of Sherbro' : but perhaps this ought to be placed to the account of the extreme brevity of the abstract.

As far as the scanty notices in the journal allow a judgment to be formed, one may certainly suppose that the *greater* river Lixus, (taken for that of St. Cyprian, upwards of 90 miles to the northward of Cape Blanco) was the utmost bounds of the Carthaginian knowledge previous to this expedition. They seem to have been well acquainted with the *Lixitæ* ;

and therefore, it must be supposed, had visited that coast before. Beyond this tribe their knowledge seems to have been extremely vague, and rested on the information of others.

Next to the Lixitæ were the *Ethiopians*, styled "inhospitable" by the journalist: and it appears that these extended along the whole coast to Cape Verde. As their language is said to have been unintelligible to the Lixitæ, who performed the office of interpreters to the Carthaginians, they must of course have been a different nation; but it may be questioned whether they were Negroes. Their being blacker than the northern tribes, with whom the Carthaginians were accustomed to communicate, might alone occasion the application of *Ethiopian* to them: and they may have been either the *Leucæthiopes*, whom Pliny places to the northward of *Nigritia* (lib. v. 8), or the *Sanhagi*, or *Assanhagi*, from whom the promontory of Cape Verde is named in Ptolemy. (See above, p. 27). In all probability the Negroes were never settled very far to the north of the arable lands. The ideas of Herodotus respecting the two nations of Africans and Ethiopians (Moors and Negroes), will be found, in p. 27.

No kind of traffic was opened with any of the southern tribes during this voyage. All was hostility on the south of Cerné.

Considering, then, the nature of this voyage, is it an improbable conjecture that it was a consequence, either immediate or remote, of the voyage set on foot by Necho; and which discovered to the Carthaginians, though perhaps unintentionally, certain

sources of traffic, (gold particularly), as well as proper stations for colonial establishments? The historical facts are so scanty here, that we are even left to conjecture the cause of an extensive system of colonization, executed *at once*, so contrary to the usual practice, which proceeds gradually in such a work⁵.

We suspect that the Egyptians, at that period, are to be regarded as rivals in commerce and discovery to the Carthaginians: that the celebrated voyage of the former, in which they were aided by Phœnician experience and skill, must have excited a great degree of commercial jealousy amongst the Carthaginians, who would doubtless seize on every opportunity of contravening the trading schemes of others; and were alive to every nautical discovery. Let it be recollected what rivalry was excited in Europe by the discoveries of the Portuguese and Spaniards at the close of the 15th century, as well as, in a degree, by the more recent discoveries of Captain Cook; and we may then readily conclude that the Carthaginians, who were more commodiously situated for a commerce beyond the straits than the Egyptians; perhaps also more in habits of traffick-

⁵ Dr. Franklin supposed that no more than 80,000 English people had been brought over to America, out of the million which it was supposed to contain in 1751. The Doctor adds, "This million doubling, suppose but once in 25 years, will, in another century, be more than the people of England; and the greatest number of Englishmen will be on this side the water." But it seems that the increase has proceeded even more rapidly than the Doctor expected.

ing, would be industrious at once to avail themselves of new advantages by the discoveries of a rival. The placing of colonies, or, in other words, of *garrisons*, in favourable situations, along the western coast of Africa, would have been a decisive stroke in favour of such a policy ; and a measure of this nature, combined with a further examination of the coast, southward, beyond the limits of their colonization, was, as we find, the scope of the Carthaginian plan, executed in part by Hanno. Whether the expedition immediately followed the discoveries of Necho, or whether the subsequent reduction of Egypt and Tyre, under one master (the Assyrian), 30 or 40 years afterwards, might render the measure necessary to the Carthaginians, cannot now be known : but circumstances may have determined the moment of execution, although the measure might have been decided on from the date of the first report of the Egyptian discoveries. But, at all events, we regard the date of Hanno's expedition, to be subsequent to that of the Egyptians under Necho, though not long after it.

We have remarked, that some of the descriptions of the lands seen by Hanno belong to former discoveries, and others to those made during that voyage. There can be little doubt of their having a pre-knowledge of a coast, on which they had not only determined to plant colonies, but had actually sent the colonists in the fleet. However, their knowledge seems to have been so slender, in the part beyond Arguin, that it could only have been derived from hearsay.

As to the immediate object of the southern expe-

dition, although it was so far a voyage of discovery, as that the coast was new to them, yet they appear to have been in quest of some interesting object more remote, and which is not expressed in the journal; and the knowledge of which object might have transpired from some of the Egyptian circumnavigators. How far they intended to proceed, we know not: but it seems very unlikely that Hanno, at this time, intended to sail round the continent, as Pliny says he actually did, (lib. ii. 57.) The practicability of it had already been decided; so that no question of *curiosity* remained; and their views of *profit* were nearer home; probably in those parts known at present by the names of the *Gold* and *Ivory Coasts*. Towards that quarter they were proceeding, when the want of provisions prevented their further progress; a circumstance very likely to have taken place in a fleet which had been crowded with passengers, during a part of their voyage: and which deficiency they had not been able to supply, because they had failed in their attempts to open a communication with the natives along the coast.

CONCLUSION.

THUS having drawn from the great and celebrated work of the FATHER of profane HISTORY, the various geographical notices with which it abounds, the Author has endeavoured to form the whole into a general system, such, as it may be conceived, existed amongst the Greeks of that day: and having completed the plan, with great deference has submitted it to the inspection of the public, from whose tribunal he hopes for a favourable judgment, since its decrees admit of no appeal.

It is possible that some readers may have condemned the work for its containing matter, in their opinion, foreign to the main subject; and others for its being, altogether, too diffuse. With respect to the first class, it may be remarked, that any system, in order to be understood, must be regularly gone through; and it happens that the dryness of geographical detail is such, that a continued series of them would rather be *referred to*, than *read*: so that the intention of explaining a system, would of course have been frustrated. It has, therefore, been the study of the Author, to intermix with the geographical matter, such ingredients, as, whilst they served to consolidate the whole mass into a regular form, would also give it the most agreeable colouring: in other words, that by the addition of history,

which it is the proper office of geography to explain ; by miscellaneous remarks and observations ; and occasionally by remarks on the physical geography ; he might supply in part that interest, which the generality of readers must ever find wanting in books of science.

In respect to objections to the *bulk* of the work, taken absolutely, the Author can only answer in the words of an eminent historian, that “ he, who in the description of unknown things, affects too much brevity, seeks not so much *that* which should be plainly told, as *that* which should be passed over¹.” In effect, a great many of the notices afforded by Herodotus, could not be so well explained, or illustrated, as by a reference to the works of other authors ; or by the introduction of foreign matter.

It is a remark of Polybius on this very subject of geography, that the ancient authors who had written concerning it, had fallen into so many errors, that it was necessary to enter into a full and deliberate examination of them ; but, at the same time, he with great candour allows, “ that their labours deserve on the whole rather praise than censure ; and that their errors are ever to be corrected in the gentlest manner ; since it is certain that they would themselves retract or alter many passages in their works, if they were now alive².”

The Author will receive that reward for which he has toiled, if the public, during the perusal of his work, have regarded it with the same sentiments

¹ Ammianus Marcellinus.

² Lib. iii. c. 5.

as those which possessed the mind of Polybius : and which may be productive of more advantage in the present, than in the former case ; since the Author hopes that he may be enabled, in person, to retract, or alter, what the discernment of his judges may condemn.

ADDENDA.

I. *Concerning* BABYLON.

CAPTAIN CUNINGHAME passed over the site of Babylon, in his way from Aleppo to Bussorah, in 1785; and thus describes what he saw :

“ Approaching within a few miles of Hillah, on the east side of the Euphrates, and without any expectation of seeing the ruins of any city, my attention was suddenly arrested by the sight of long mounds of earth, running parallel to each other, and having others crossing them at right angles. Fragments of bricks or tiles, some of variegated colours, were scattered about, and lying in the hollows between the ridges; and at intervals, remnants of foundation walls appeared. My guides told me it was *Macloube*; but as I could speak little Arabic, and did not meet any one at Hillah who could speak English, I knew not, until I reached Bussorah, what place I had seen : and that it was unquestionably the site of ancient Babylon that I had passed over.

“ I remarked one mound that was very large, and of a circular form, and which had round its base pieces of coloured tiles or bricks : the blue colour,

in particular, attracted my attention. This mound could not be far from the river, as we soon after came on its bank." (*Refers to page 485, Vol. I.*)

"The greater part of Hillah appears to be built of furnace-baked bricks, which is different from what I saw in other places. All Bussorah is built of sun-dried bricks: so that after heavy rain, the falling of houses into the streets is no unusual sight." (*Refers to page 482, Vol. I.*)

"The city of Bussorah is certainly more than seven, but less than twelve miles in circuit. It has corn-fields, date-groves, and gardens, within its walls. Near half of the area, I conclude, is built on." (*Refers to page 454, Vol. I.*)

II. Concerning the OASES of EGYPT and AMMON.

Mr. Browne adds to his former description, the following circumstances:

"Even in that part of the district of El-Wah, called Charjé, the vegetable soil by no means occupies the whole space; but each spring forms an insulated mass, round itself. Near the town, and between the gardens, is a sandy surface, in which the palm grows, but which, in great part, is not fit for gardens. There are irregularities of surface; and in the lowest ground rice is cultivated. At Siwa, the soil is not so interrupted by sand, but continuous and level." (*Refers to page 186, sup.*)

“ There are some other villages besides those I have marked, in El-Wah, but not immediately in our route, and in themselves inconsiderable. A few scattered palm-trees are also met with at intervals.” (*Refers to page 206, sup.*)

“ The word *Gherbi*, in the vulgar dialect of Egypt, is commonly used to signify *western*; why applied to the Lesser Oasis, I cannot positively say. Though they sometimes, if I mistake not, call the Greater Oasis by the name of *El-Wah el Kibli*, which in that dialect means the southern.” (*Refers to page 208, sup.*)

“ In saying (p. 29.) that ‘ the temple may be buried in the sand,’ I meant not to suggest that this could have happened at Siwa; but on the supposition of its having belonged to some other Oasis, that both island and temple might thus have perished.” (*Refers to page 257, sup.*)

The COMMITTEE of the AFRICAN ASSOCIATION have just received the following short notice respecting the remains at Seewa, from Mr. Hornemann (see note to p. 256, sup.) contained in a letter from Tripoly, dated 19th August, 1799. His journal, which contains the details, is not arrived.

“ Siwah is, without doubt, the country of the ancient Ammonians. I found some ruins and a great number of catacombs there. Of one part of the ruins there are only the foundation walls to be seen. Another part consists of the foundation walls of a large building, within which, and near the middle of it, are seen the ruins of a remarkable edifice.

“ It stands on an eminence, composed of limestone ;

and is, as I conceive, the same that Mr. Browne saw. I should take these ruins for those of the Temple of Jupiter Ammon, if the description of it in Herodotus was not so unlike what I saw. I entered more than eighty catacombs. They were in four different places; but there was a fifth, said to be under ground, which I could not get any body to shew me. I could find no whole mummies, but abundance of skulls, and other bones."

III. VARIATION *of the* MAGNETIC NEEDLE at *Alexandria.*

By observations made there by the French, in 1798, the variation was $13^{\circ} 6'$ westerly. M. Niebuhr reports $11^{\circ} 4'$ there, in 1761; and M. Chazelles, from $13^{\circ} 7'$ to $12^{\circ} 30'$, in 1694. (See Zach's Geog. Ephem. for July 1799, p. 62). It is probable, therefore, that the variation is not taken too high, at 15° , in the meridian of Parætonium. (*Refers to p. 218, sup.*)

IV. *Further Notices respecting the Lotus Fruit* *appear in Mr. Browne's Travels.*

He saw two kinds in Darfoor, (Dar-Fûr) named *Nebbeck*. (See the description in p. 270.) He adds, "the natives eat the fruit, fresh or dry; for it dries on the tree, and so remains great part of the winter months. In that state it is formed into a

paste of not unpleasant flavour, and is a portable provision on journies."

Here then we have the lotus at the eastern, as well as the western extremity of the African Desert.
(*Refers to p. 292, sup.*)

I N D E X.

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. The Names belonging to ancient Geography are in Italics. The Roman Figures refer to the Preface, the Arabic ones to the Book generally.

⚡ Abbreviations.—I. Island. R. or Ra. River, or Rivers. Mt. or Mts. Mountain, or Mountains. C. Cape, or Promontory. L. Lake. Tr. Tribe.

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